



Excited Delirium

Not for Human Consumption

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I HAVE NOTHING TO DISCLOSE



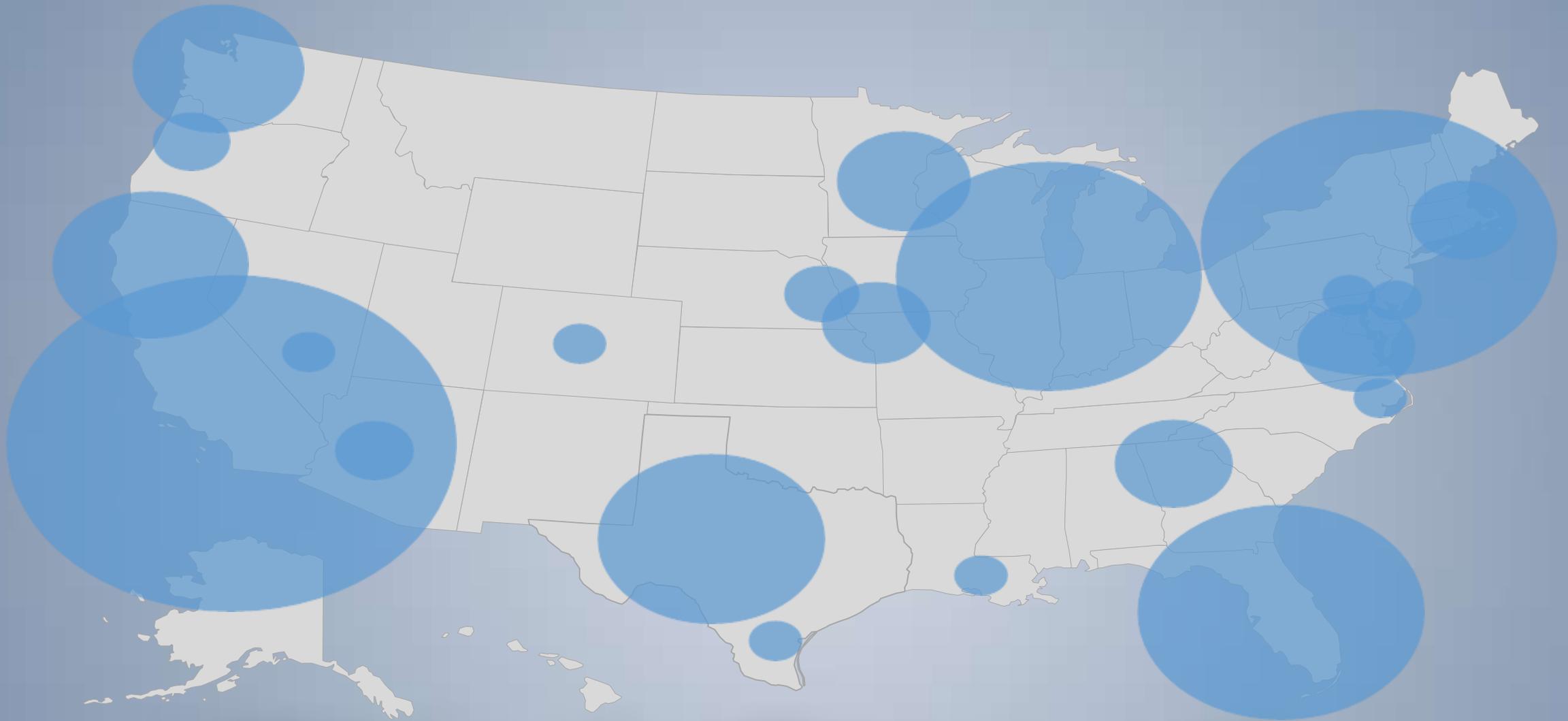
What are we talking about?

- Determine the most appropriate management and treatment of the patient with delirium
- Define Excited Delirium (DM)
- Formulate a plan of action for the management and treatment of the agitated patient
- Identify the key characteristics and effects of synthetic drugs, most notably synthetic cannabinoids and synthetic Cathinones

Toxicology: What's in our patients

- ETOH
- Marijuana
- Pills: Vicodin, Percocet, Oxy, Xanax... etc.
- Meth, Heroin, Cocaine
- Synthetics & Bath Salts
- Designer drugs
- ?





Drugs are Geographical

What is the problem?

- › 1350 EMS called to 16 y/o male
- › PD called for EMS
- › PD arrived to find pt in the backyard of residence that was not his, he was tased 5 times and pepper sprayed multiple times. PD state he was awake, foaming at mouth and skin hot to touch
- › EMS found pt in cuffs, prone
- › Pt stated his name was JC
- › Asked about pain “no, I am JC”





EMS/FD Physical Exam

- › Small LAC to forearm, bruising to wrist noted from cuffs
- › EMS V/S: 158/90 150 22 90% Sugar 244
- › Pt coded in front of EMS
- › ACLS started
- › Skin hot to touch
- › Minor bruising noted



ER Treatment

- › CPR in progress
- › Multiple marks noted from baton strikes 25-30 times
- › Temp 105.0
- › ACLS protocols
- › Labs: WBC 15, H&H 10.6/30.7, NA 153, CO2 5, CA 6, UDS: NEG
- › Pronounced 30 minutes after arrival

Autopsy (SLU Toxicology)

> Blood

- MDPV (Methylenedioxypropylamphetamine) 15 MCG/ML (20-30 x more potent than Methylphenidate)
- Naphyrone : Negative
- Pyrovalerone: Negative

> Urine

- Same as Blood



The Driving Range

- › 21 y/o male ran out of woods naked screaming and swinging a golf club
- › Police called to the scene, sprayed male with pepper spray multiple times without effect
- › Male was tased 5 times
- › He was handcuffed and transported to hospital
 - Yelling he wants to eat everyone
 - Making animal noises
- › Attacked a nurse, was tased 12-15 times additionally at hospital

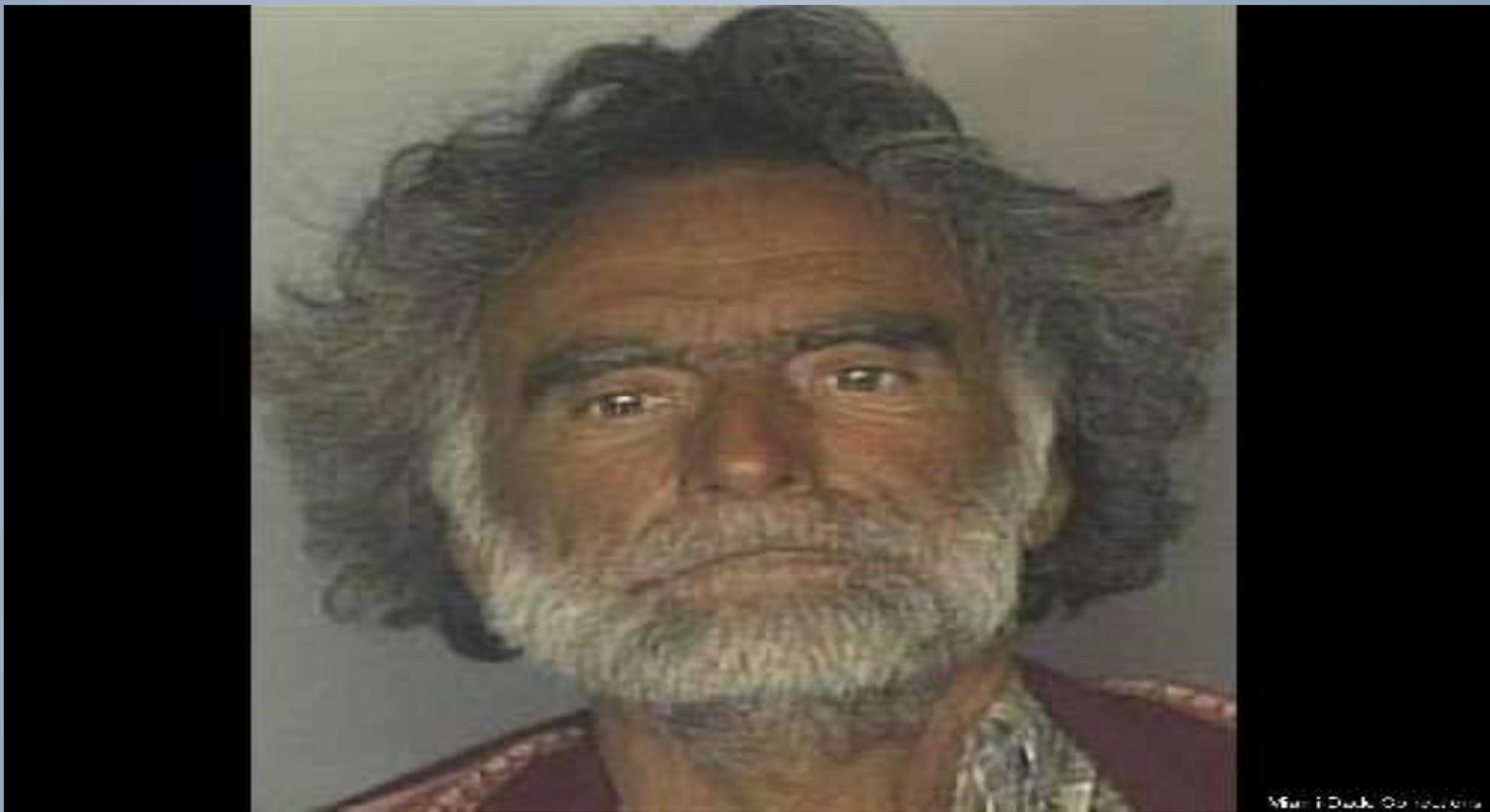




Homeless Man Attack

What have you heard?





Man in Dark 09 100 010











Bystander stated

- › “just stood, his head up like that, with pieces of flesh in his mouth. And he growled.”

Enough Said...



Emily Bauer

Houston, TX

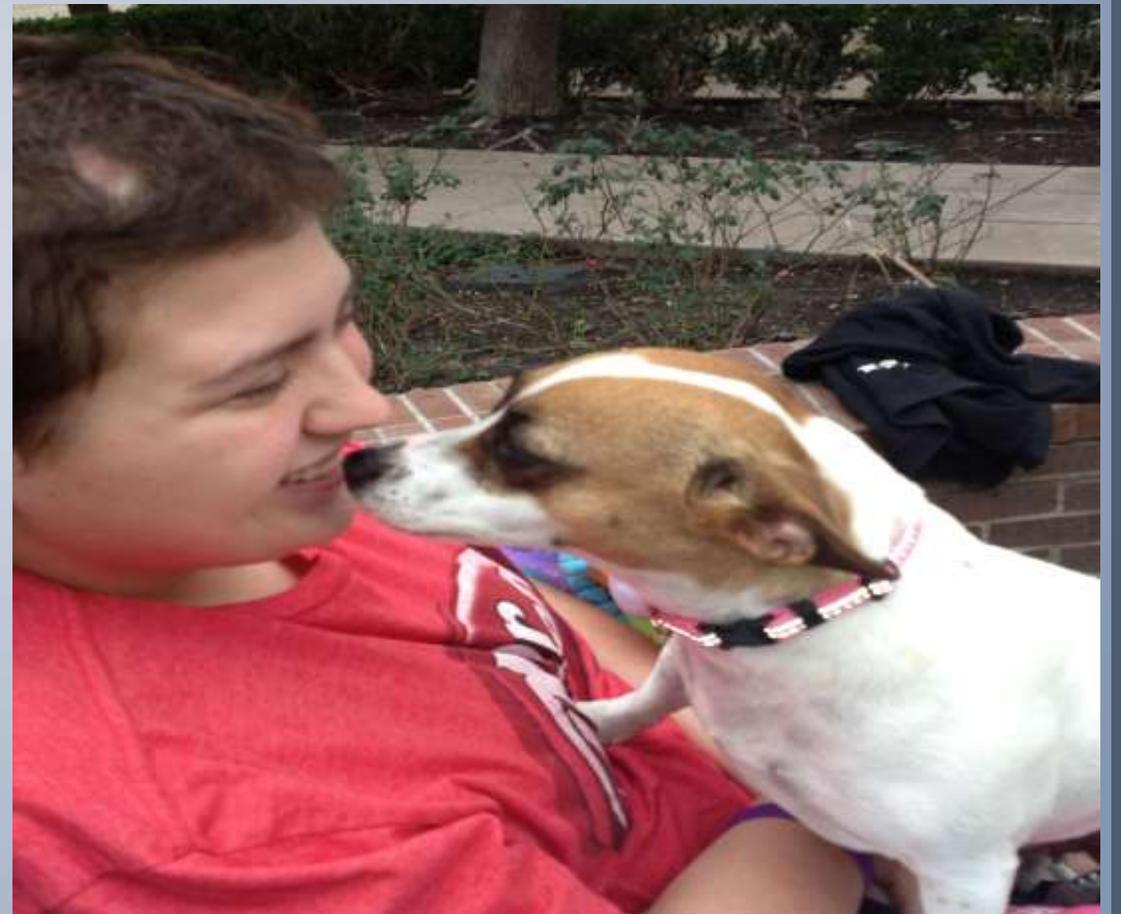


- › A/B Sophomore lived with both parents
- › Occasionally smoked marijuana
- › 12/7/2012 Smoked synthetic marijuana with friends
 - Took nap at her home in afternoon
 - Woke up “A different person”
 - Was admitted to the ICU, reported to bite caregivers, bite the side rails on the bed, eventually restrained













New Drugs on the Streets....

What is causing all this?

Synthetic Drugs

Synthetic Marijuana & Bath Salts

Not new but still poorly understood.....



Where did this come from?

- › 1984 the National Institute on Drug Abuse funded the research of Dr. John Huffman @ Clemson
- › Over next 20 years he created over 450 synthetic compounds
- › 2 of the compounds in 2000 started to be sold in Germany
 - Spice and K2





What we don't know...

Don't have toxicity data

Don't know the metabolites

Don't know the pharmacokinetics

Drug interactions

Long term

Pregnancy

Best treatment



What we do know

Synthetic Drugs Are Deadly Chemicals

One-time use has resulted in death

Adults and children have died

Deliberately mislabeled to avoid regulation

No end in site...

So how is it made?





Flavor Added to Spice

- › Cotton Candy
- › Bubble Gum
- › Juicy Fruit
- › Strawberry
- › Fruit Punch
- › And more



Spice Effects on Mind & Body

- 
- › **Agitation**
 - › **Anxiety including extreme panic attacks**
 - › **Depression**
 - › **Paranoia**
 - › **Psychosis**
 - › **Hallucinations**
 - **Visual**
 - **Auditory**
 - › **Flashbacks**
 - › **Increased blood pressure**
 - › **Increased heart rate**
 - › **Cardiac arrest**
 - › Blood shot eyes
 - › Insomnia
 - › Tingling, numbness
 - › Vomiting
 - › **Brain Seizures**
 - › Tremors
 - › **Suicidal Thoughts?**

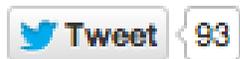


New Hampshire declares state of emergency over synthetic drug

BY TED SIEFER

MANCHESTER N.H. Thu Aug 14, 2014 5:48pm EDT

16 COMMENTS



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(Reuters) - New Hampshire Governor Maggie Hassan declared a state of emergency on Thursday in response to 44 reported overdoses linked to people smoking or ingesting "Smacked," a synthetic marijuana-like product sold in convenience stores as potpourri.

The state of emergency authorizes public health officials to investigate stores and quarantine the product, and Hassan directed the officials to work with local police departments to do so.

"These products pose a serious threat to public health, especially to young people, and it is



Bath Salts

Synthetic Cocaine, PCP, LSD



Amphetamine



O2 Atom



Cathinone

Amphetamine



Methyl Group



MethAmph

Cathinone



Methyl Group



Methyl-
Cathinone



› Published findings

- Russia contacts him stating they have similar drug
 - › 1970's called "Ephedrone" (Jeff)
- Next four decades, was a theory until 2019/2010
 - › Bath Salts (What about the name)
- How Meth, Amph and Cocaine (Reuptake Inhibitor) works
Dopamine

So why are these people naked and fighting?





- › Mephedrone (Kl) – Sold in Europe as
- › MDPV – Ritalin (20 X 30 m)
- › Methylone – (1 Ketone group f
Gen
- › Glass Cleaners/Er
- › Ladybug Attractant





Bath Salts – Synthetic Stimulants and others -What are They?

- › A very dangerous synthetic drug
- › **Are NOT used for Baths!**
- › Deliberately Mislabeled
- › “Not For Human Consumption”





Bath Salts Effect Mind and Body

- **Insomnia**
- **Agitation, Easily Angered**
- **Extreme Energy**
- **Extreme Paranoia**
- **Psychosis**
- **Hallucinations**
- **High Body Temperature can melt muscles**
- **Kidney Failure**
- **Increased blood pressure**
- **Increased heart rate**
- **Stimulant High**
- **LSD Hallucinations**
- **PCP Strength**
- **Amphetamines Paranoia**





Where is it being sold and how is it displayed?

Sold mostly in independent mom and pop type stores, convenience stores, gas stations or on the internet.



► *Addictive/Abusive Properties of “Bath Salts”*

- extreme/highly addictive property

- intense craving

- binging



Other Designer Drugs



Molly: MDMA





Pure Form of Ecstasy

- › Methylene DioxyMethAmphetamine
- › Miami/NY Molly: Mix of bath Salts, Meth, and MDMA mixture.
- › One capsule had: Cocaine, Meth, Unk Opiate
- › Death in NY: Toxicology reveled MDMA & Methylone

Latest Version of K.C. Synthetic Drug

Marked as “enhanced plant vitamin – not for human consumption.”

Characteristics include:

- *Quickly addictive*
- *Stimulates the central nervous system (like meth).*
- *Can lead to severe psychosis (and suicide)*



Gravel



TRIPPY HERBS

KRATOM

10X

MITRAGYNA SPECIOSA





Dextromethorphan (DXM)



- › Other names:
 - DXM, Dex, Dexing, Orange Crush, Poor mans PCP, Red Devils, Robo, Robo-tripping, Skittling, Triple C's, Vit-D
- › Abused for the past 30 years
- › Chemically R/T opiates
- › Compared to Ketamine or PCP
- › Blocks the Dopamine reuptake site, activates the sigma receptor

What do they take?

- › Products that contain the cough suppressant Dextromethorphan
- › Active ingredient “Dextromethorphan hydrobromide”
 - Tussidex, Triaminic, Vicks 44 Cough, Zicam, PediaCare Childrens Long Acting Cough, Delsym
- › What else is in the product?
 - Benadryl, Tylenol, etc.
- › Is the child taking any meds that would interact?
 - MAOI’s (Can lead to serotonin syndrome)
 - Diet Drugs



Why they take it

› 4 Different levels or plateaus: (Levels vary)

- First: 100mg-250mg: Very empathetic, robo walking followed by drippy feeling. Party dose
- Second: 250mg-450mg: More euphoria, decreased sense of surrounding
- Third: 450mg-800mg: Hallucinations are present, mostly in spirals or visions of fluid
- Fourth: 800mg-1800: Out of body experience
- Fifth: >1800: Overdose

(Robotussin Max Strength 354MG)

“Anything above 1200mg you should be close to hospital”





- › S/S will depend on the dose and other drugs in the system:
 - Profuse sweating
 - Extreme Nausea
 - Blackouts
 - Respiratory depression
 - Vision
 - Tachy
 - Spasm of the abd and intestines
 - Can last up to 48 hours
- › Treatment is supportive
- › Is there any reversal agents for DXM?



WHAT DOES ALL THIS MEAN??



Excited Delirium Syndrome

Agitation

Treatment Triad

Acidosis

Hyperthermia

“Treat the Triad!”

History

Sudden Deaths in the U.S.

1849	Dr. Bell, 40 patients / 30 deaths
1881	Term ED in medical literature
1849-1947	Similar reports of SD
1948-1960	No SD reports (sedation)
1960-1980	SD reports reappear
1980s	Drastic increase in SD

WHY in the 80's?



White Paper Report on EDS (2009)

- › American College of Emergency Physicians
- › ED Task Force
- › Purpose:
 - Existence of ED? Is it even a disease process?
 - What are the characteristics?
 - Control and treatment
- › They developed and put out their findings in the “White Paper Report”

Their findings

The name?

Identification?

- Overlap other disease processes
- Opted for syndrome over disease, because of the lack of clear definition and cause...

Can you think of another syndrome that this applies too?

Exact pathophysiology?

Possible dopamine transport abnormalities, enzyme excess or deficiency, overdose vs. withdrawal state of combination of medical and psych conditions





- › No Test for it
- › Although not all fatal some may identified quickly thus preventing death with directed therapeutic intervention
- › Awareness
- › EMS, Law enforcement, correctional officers, etc...

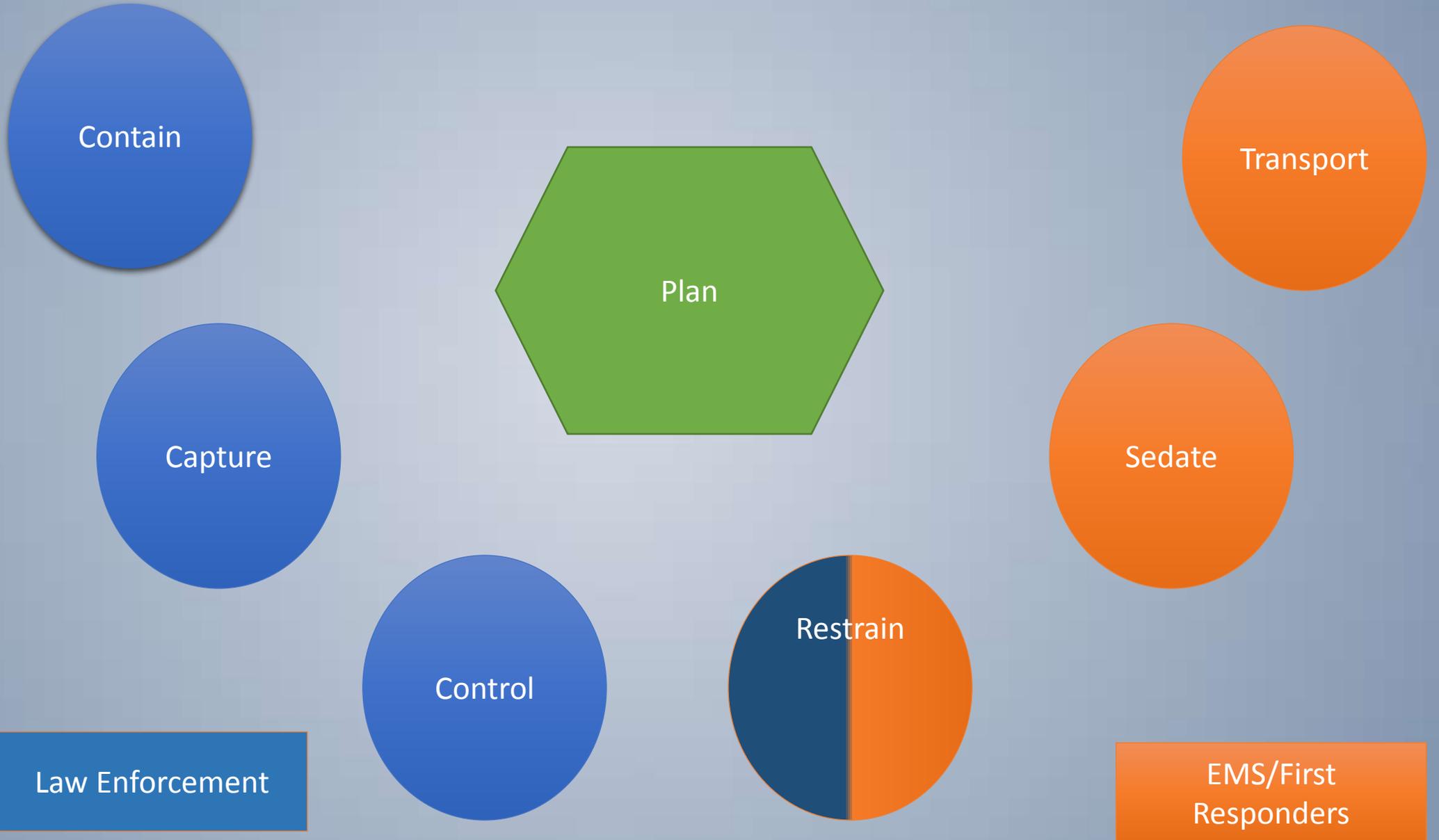
The important stuff

- › Distinguish between Excited Delirium and mental illness
 - Indicators for ED are similar to ones exhibited by a mentally ill person or OD
- › Minimize risk and liability to all first responders
 - Police, Fire, EMS
- › Provide best care for the patient

This is a medical EMERGENCY



All first responders need to know the capabilities of the other players and everyone needs to know their role.



What to watch for?

Naked

Running wildly

Running in traffic

Often demonstrate:

Violent behavior

Bizarre behavior





Unlimited endurance

Superhuman strength

Reduced sense of pain

Muscle rigidity

Violently resist:

capture / control / restraint

before / during / after arrest



Hallucinations

Intense paranoia

Extreme agitation

Emotional changes

Disoriented about:

Time/Place/Purpose

Delusional

Scattered ideas

Easily distracted

Psychotic appearance

Described as:

Just snapped

Flipped out

Phases of ED

- Stage I: Hyperthermia (not always)
- Stage II: Delirium (incoherent)
- Stage III: Respiratory Arrest
- Stage IV: Cardiac Arrest

Who Needs Training

LEO

- › Potentially lethal medical syndrome
- › Intense public scrutiny
- › LEO must recognize
- › How to ExDS present
 - Irrational, often violent and relatively impervious to pain
- › What is taught to LEO to work with the public
 - Rational conversation
 - Comply with painful stimuli
 - › Pepper spray
 - › Impact batons
 - › Joint shock maneuvers with punches/kicks
 - › ECD





› Options if they don't work???

Recognize, Contain and EMS

› EMS:

- Call takers
- RRL (Recognize, Retreat and Law)

› Verbal calming and de-escalation techniques

› Wrestling with patient

- What happens when we do this?
 - › Catecholamine surge and metabolic acidosis
 - › Multiple trained staff

Ok we know what it is.....How do we treat?

- › Monitor
- › IVF: NS
 - ED patients typically need 20L in first 24 hours
 - Cool fluid if possible
- › Counter Acidosis
 - Controlling ventilation
 - Bicarb Drip
 - › 50 Meq Bicarb/1000ml rapid infusion
 - › Can repeat once



Original recommendations

- › Task Force (and most authorities) recommends aggressive chemical sedation as first line
- › Benzodiazepines
 - Valium, Versed, Ativan
- › Antipsychotics
 - Haldol, Droperidol
- › Atypical antipsychotics
 - Geodon, Zyprexa
- › Dissociative anesthetic agent
 - Ketamine
- › RSI





Hyperthermia

- Cont monitoring
- Remove clothing...oh wait
- Cool environment with misting of water on exposed skin with fans
- Ice to neck, groin and axillae
- Cold saline has shown to be affected
- Rare cases, immersion in cool water but difficult to monitor
- Commercial products
- Dantrolene

Acidosis:

Fluid resuscitation, Bicarb based on lab results

Other:

Rhabdo, hyperkalemia

In a perfect world

- › Immediate gratification!!!
- › Limited side effects
 - Cardio
 - Resp
 - Neuro
 - Hyperthermia
 - Drug Interactions



Rapid Onset

Single Dose

Good Safety profile in healthy pts:

Supports HR/BP

Preserves Resp Function

Neuro concerns?

Limited data for this indication



Prehospital Goals of Therapy

- › Quickly and effectively gain compliance with a single dose
 - 5 mg/kg IM
 - 2 mg/kg IN ???
 - 1-2 mg/kg IV
- › Prevent violent struggle with police and ongoing struggle against restraints
- › Ensure EMS crew safety
- › Don't play with dosing, goal is a full dissociative state



Ketamine

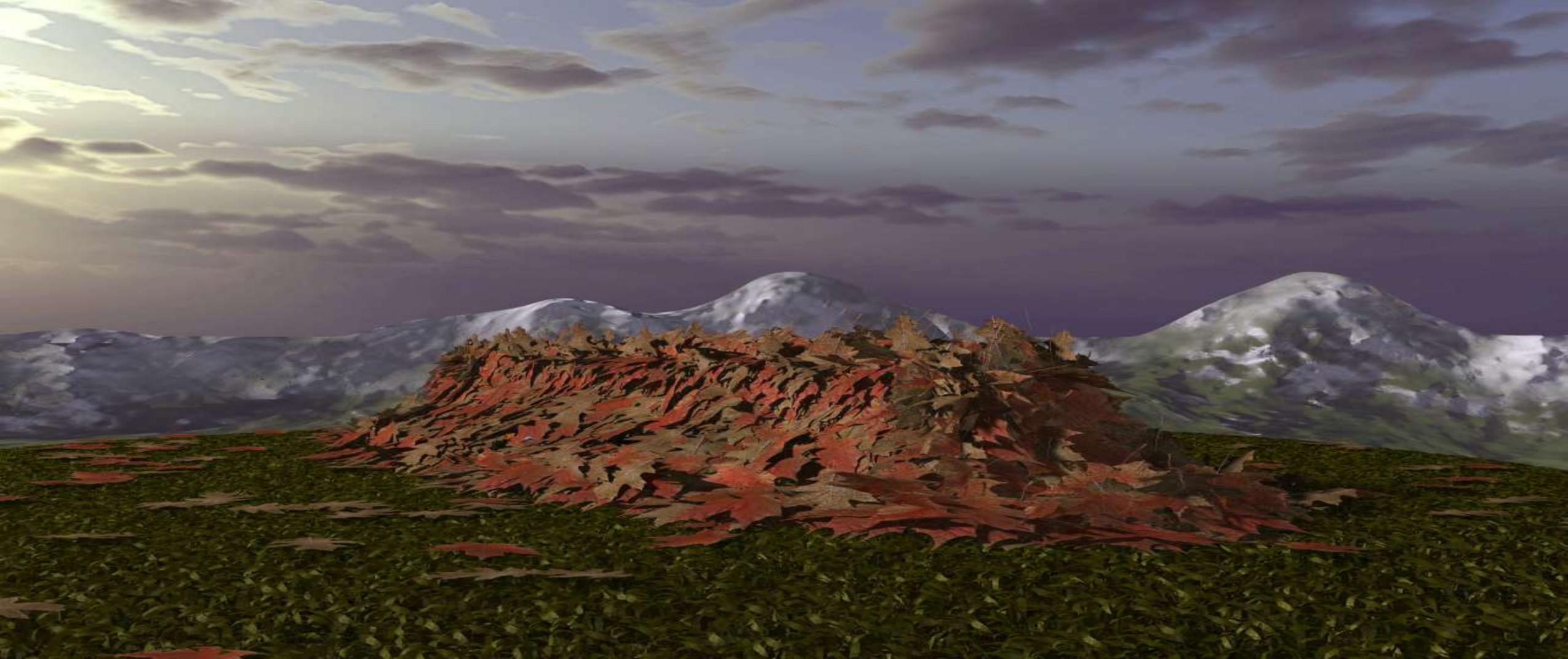
- › Adverse Effect:
 - Laryngospasm, drooling, n/v
- › Worrisome is the possible drug interactions
 - ETOH, Narcs, Bzd, Meth, Cocaine
 - Psych issues
 - Intubations???



In Hospital Treatment

How do we treat these patients once EMS gets them to us?





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