

Pollakoff 's Hierarchy of Highs

2013 Edition v.3

Created by Jeff and Conan Pollakoff

OFFICIAL DISCLOSURE

I have no financial interests in any of the products described here-in



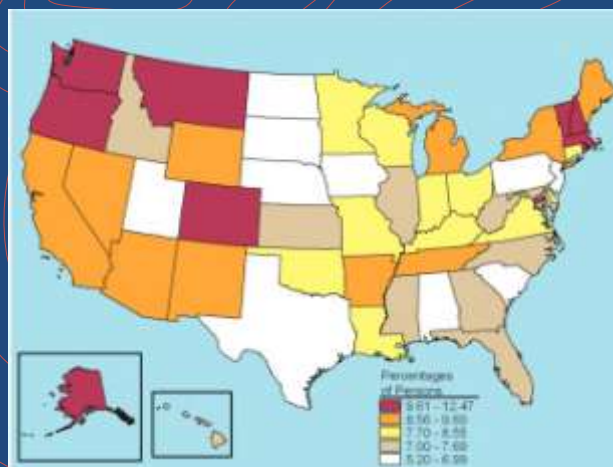
Pharmaceutical Factoids

Of the half million known species of plants, approximately 150 have been used for psychedelic effects.

The United States has 4 percent of the world's population, but consumes 65% of the world's supply of hard drugs.

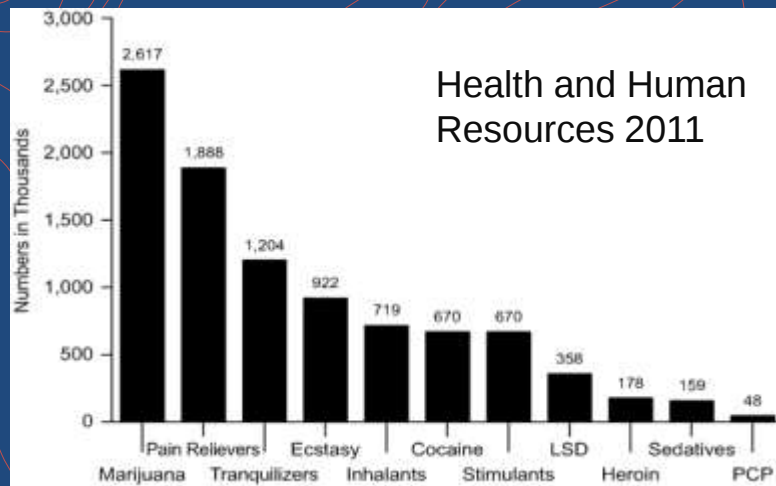
Impact of Psychotropic Agents

The result: 95% of the adult US population is currently using some type of psychoactive drug, including prescription drugs.



Changing Demographics of Use

Most recreational drug use is with marijuana followed by prescribed analgesics



Common Psychedelic Substances

Amanita muscaria



Fly agarics are known for the unpredictability of their effects. Found throughout North America – Fly agarics appear on Christmas Cards and New Years cards from around the world as a symbol of good luck!

Common Psychedelic Substances

Betal Nuts



Betel nut may cause stimulant and euphoric effects. As a result, it is sometimes used recreationally. Once used as toothpaste it is now linked to oral cancer

Common Psychedelic Substances

Calamus/Sweet Flag



Walt Wiltman wrote a book called "Leaves of Grass" which makes numerous references to Sweet Flag and has a very good description of its effects hidden in the poetry.

Results of use vary It takes about 2-4 hours before anything starts happening and it is very subtle. In fact so subtle that if your at a loud party, you won't notice a thing.

Common Psychedelic Substances

California Golden Poppy



THC like end product. Normally smoked, it has a sedative and diuretic effects.

Coleus



Action is still not well understood. Probably related to MAOI's. Effects are anecdotally reported as psychedelic

Common Psychedelic Substances

Datura aka Jimson Weed



These drugs are not usually regarded as psychedelic, although they have a great deal in common historically, culturally, and pharmacologically with other drugs taken for their mind-altering powers. They are called anticholinergic/ delirants. They block the action of acetylcholine and at high doses effects include incoherent speech, disorientation, delusions, and hallucinations, frequently followed by depression and amnesia for the period of intoxication.

Common Psychedelic Substances

Datura aka Jimson Weed



Datura was an OTC remedy for asthma called Asthmador in the mid 1950's. It was a fine powder, nonprescription mixture of belladonna and datura stramonium. The directions on the package state that the powder is to be burned and the smoke inhaled to relieve bronchial asthma.

Common Psychedelic Substances

Morning Glory Seeds



To reach an LSD like effect, a person would have to ingest 100 to 300 morning glory seeds. The seeds can be ground up and ingested like a tea, chewed, or swallowed whole. To discourage use today, commercial seed producers treat the seeds with a poisonous coating which cannot be removed by washing (usually fungicides although methyl mercury has been reported). The effects from this coating cause nausea, vomiting and severe abdominal pain. Extremely high doses reportedly cause psychotic reactions, heart failure, and shock.

Common Psychedelic Substances

Nutmeg



Common presenting complaints are hallucinations, palpitations, and feelings of impending doom. As laboratory tests are usually normal, this diagnosis should be considered in patients presenting with an acute psychotic break accompanied by symptoms resembling an anticholinergic toxic episode. Treatment is primarily supportive once other life-threatening conditions have been ruled out.

Where and When



Nefertiti offering Akhenaton Poppies.about 1340 BC

Ancient Use of Opium

More than 6,000 years ago, the Sumerians, living in present-day Iran, cultivated the opium poppy. They named it hal gil, "the joy plant".

Ancient Greek documents describe over 700 remedies using opium.

Poppy cultivation appears to have originated in Europe, and hemp from china

Opium, a Tool of Financial Security

The Romans were so attached to opium use, the Roman Emperor, Diocletian fixed the price to avoid speculation

By 312 C.E. fifteen percent of the Roman Empires tax revenue was generated by the sale of opium



Opium in the early eighteenth Century

"In Britain's early eighteenth century... the various names given to opium solutions designed for household use:

Mother's Helper Infant's Quietness Atkinson's Preservative
Dalby's Carminative Soothing Syrup Godfrey's Cordial"

Louisa May Alcott, George Washington, and Florence Nightingale were also habitues of the drug



Pot, Ancient China to the Founding Fathers

Marijuana was used in China as long as 12,000 years ago.

Poppies, hemp, and darnel were scavenged, dried, and ground up to produce a medieval hash brownie known as "crazy bread".

Both George Washington and Thomas Jefferson cultivated marijuana. While there is no evidence that either smoked it, we know that Washington used it as a poultice for his inflamed gums.

"If people let government decide which foods they eat and medicines they take, their bodies will soon be in as sorry a state as are the souls of those who live under tyranny."

A portrait of Thomas Jefferson, an older man with white hair, wearing a dark coat and a white cravat.

A dark glass bottle of 'Cannabis Sativa' extract. The label is yellow with black text. It reads: 'Tinctura Cannabis Sativa', 'F. COHEN & CO. PHARMACEUTICALS', 'NEW YORK', 'SOLE IMPORTERS', '100 N. 3RD ST. N.Y.C.', 'TRADE MARK', 'F. COHEN & CO. PHARMACEUTICALS', 'NEW YORK'. The bottle is dark and has a cork stopper.



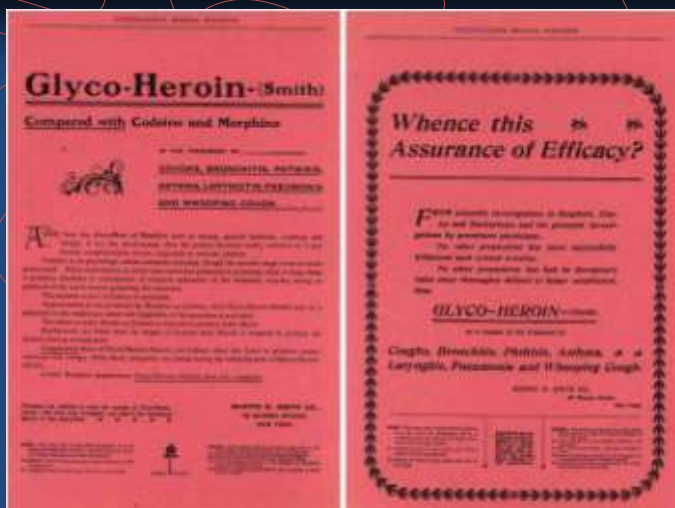
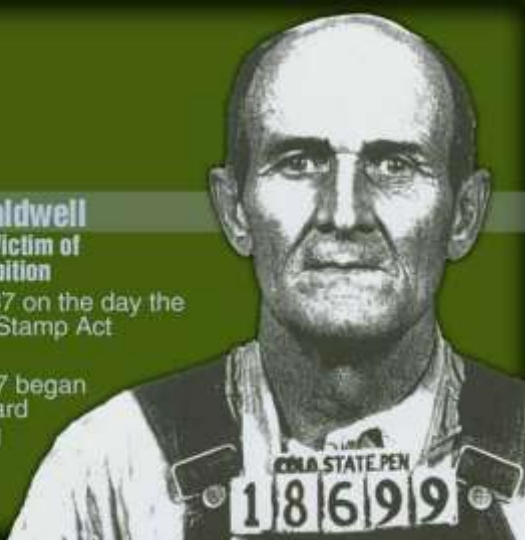
First offender of Marijuana Prohibition - 1937

Samuel R. Caldwell America's First Victim of Marijuana Prohibition

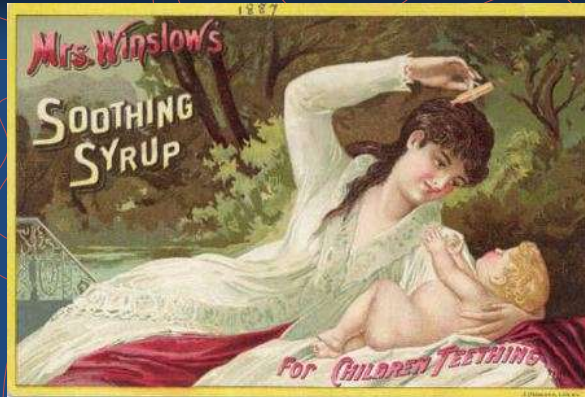
Arrested in 1937 on the day the
Marijuana Tax Stamp Act
was enacted

On Oct. 8, 1937 began
four years of hard
labor for selling
two joints

norml.org



Heroin was widely used not only as an analgesic but also as a remedy for asthma, coughs, and pneumonia. Mixing heroin with glycerin (and often adding sugar or spices) made the bitter-tasting opiate more palatable for oral consumption. 1904



Mrs. Winslow's Soothing Syrup was an indispensable aid to mothers and child-care workers. Containing one grain (65 mg) of morphine per fluid ounce, it effectively quieted restless infants and small children. It probably also helped mothers relax after a hard day's work. The company used various media to promote their product, including recipe books, calendars, and trade cards such as the one shown here from 1887 (A calendar is on the reverse side.).

A Cure for Morphine Addiction

In 1898, Bayer trademarked the drug Heroin **as a non-addictive, non-tolerance producing substitute for morphine and a nontoxic replacement for codeine.**

BAYER
PHARMACEUTICAL
PRODUCTS.

Send for
samples and
Literature to

ASPIRIN
The substitute for
the salicylates

HEROIN
The substitute for
morphine

LYCETOL
The uric acid solvent

SALOPHEN
The antirheumatic and
antemigraine

FABRICENFABRIKEN OF
ELBERFELD CO.

40 STONE ST
NEW YORK.

History Repeats Itself

Marketed as a sleeping aid during the 1960s, Quaaludes was described as a ***non-addictive, non-tolerance producing substitute for barbiturates***. It was neither!



Bottle of Methaqualone tablets
Anonymous Photographer, © 2002 Emulid.org

Not What They Thought it Was

In 1985, a number of men in San Jose were found paralyzed in fixed postures.

After taking what they thought was a designer heroin derivative, it was discovered that an error in production caused permanent neurological damage. Instead of MPPP they received MPTP.

[illegible]

Timing is Everything

Time to brain

- Smoking
7 to 10 seconds
- Injecting
15 to 30 seconds (IV)
3 to 5 minutes (IM or SC)
- Snorting
3 to 5 minutes
- Contact – Skin or mucus membranes
3 to 5 minutes for eyes
5 to 30 minutes for skin and other areas (mouth, anus, vagina)

It's the Neurotransmitter that Counts!

Drugs and Their Neurotransmitters

Amphetamines	epinephrine, norepinephrine, acetylcholine, dopamine, serotonin
Barbiturates	GABA
Cathinone	epinephrine, norepinephrine, dopamine, serotonin
Cocaine	epinephrine, norepinephrine, dopamine, serotonin
DMT	acetylcholine, serotonin
Flunitrazepam	GABA, glycine
GHB	GABA, dopamine
Ibogaine	dopamine, serotonin, NMDA, norepinephrine
LSD	acetylcholine, dopamine, serotonin
Marijuana	anandamide, acetylcholine, dopamine
MDMA	epinephrine, norepinephrine, dopamine, serotonin
Opiates	endorphins, enkephalins, dopamine
PCP	dopamine, acetylcholine, alpha-endopsychosin

Acetylcholine

Dilated pupils

Dry mouth

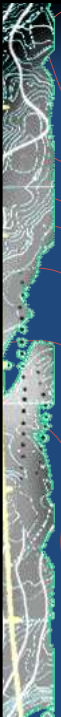
Involved with memory

Muscle twitching

Slows heart rate

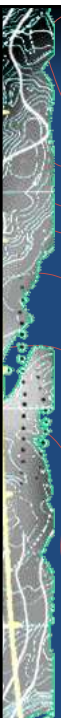
Stimulates muscles and glands

Stimulates gastro-intestinal system



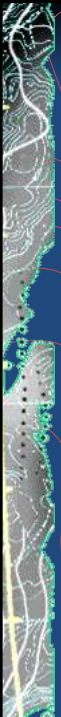
Dopamine

- Pleasure Center
- Causes hallucinations
- Decreases appetite
- Involved in purposeful movement
- Low levels cause addiction
- Increased levels in the mesolimbic pathway in schizophrenia



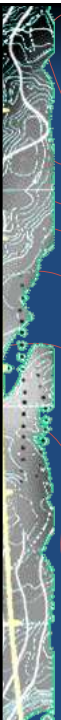
GABA

- Affects recall
- Increases seizure threshold
- Inhibits many CNS functions
- Relieve pain
- Slows breathing



Norepinephrine

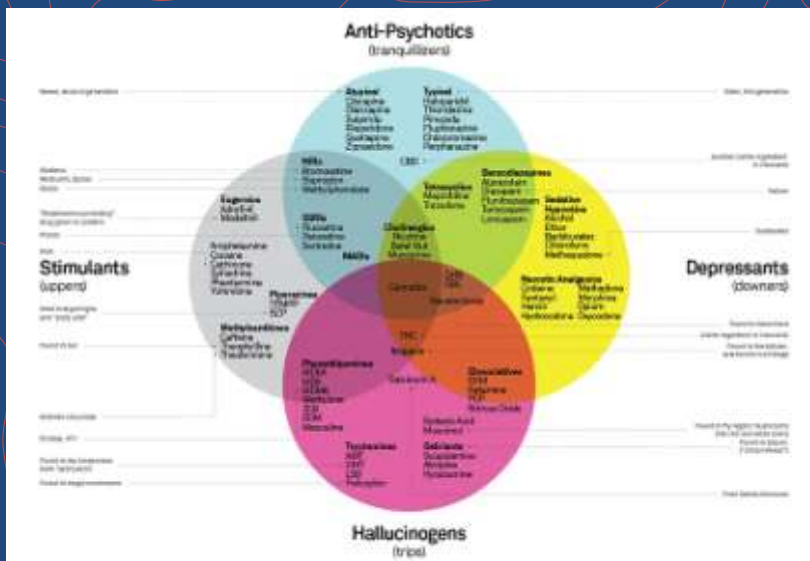
- Stimulates the sympathetic nervous system
- Stimulates the amygdala
- Activates the breakdown of fat
- Decreases appetite
- Increases blood pressure and heart rate
- Involved in memory



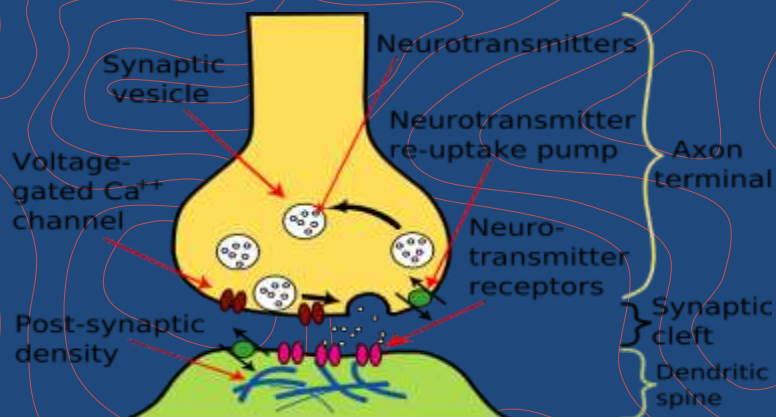
Serotonin

- Plays a role in perception
- Involves mood
- Effects appetite
- Increases body temperature
- Involved in sleep

Classification of Psychoactive Substances



Mechanism of Psychoactive Drugs

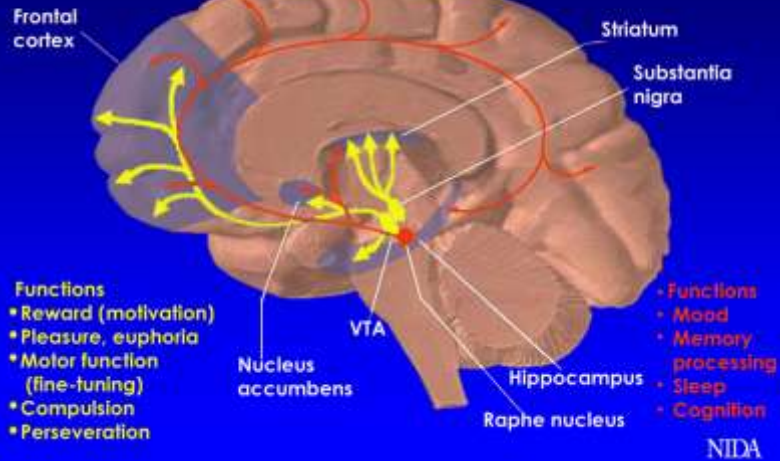


A psychoactive substance may block the receptors on the post-synaptic neuron dendrite, or block reuptake or affect neurotransmitter synthesis in the pre-synaptic neuron axon.

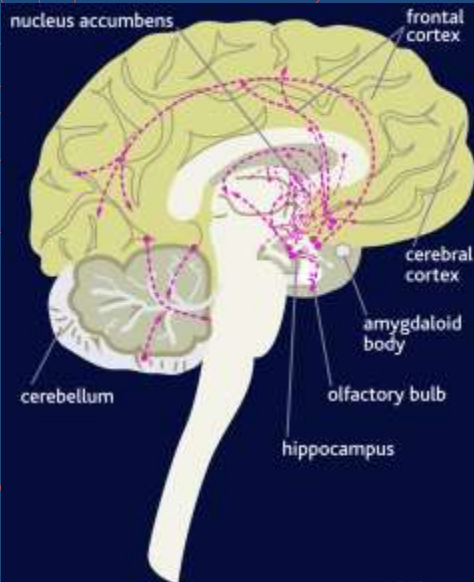
Serotonin and Dopamine Pathways

Dopamine Pathways

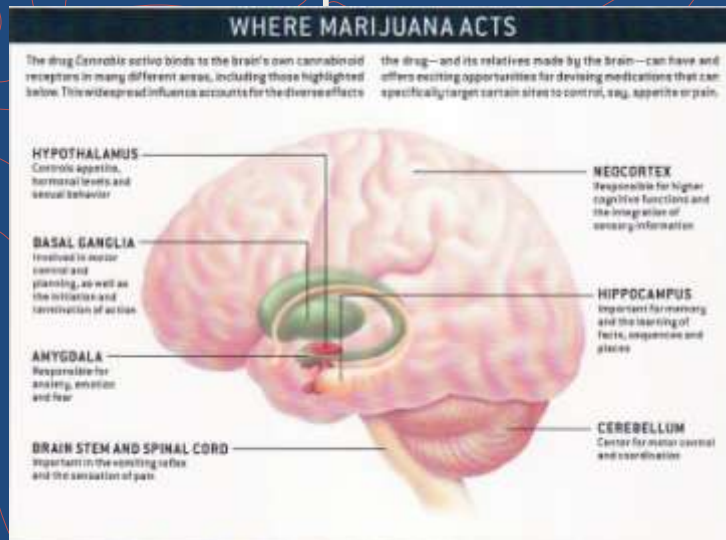
Serotonin Pathways



GABA Pathways

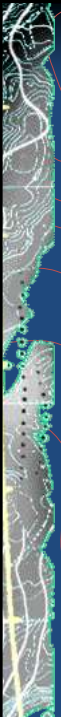


CB₁ Receptors



Hyper-Dynamic Drugs Amphetamines and Cocaine





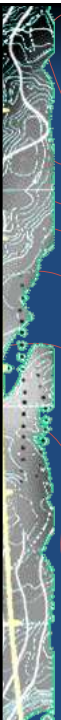
Hyper-Dynamic Drugs

Hyper-dynamic Drugs: Drugs with severe adrenergic properties...

Meth Amphetamine

Amphetamine,
Cocaine

Other drugs that would be similar are Ecstasy, Peyote, and PMA



Methamphetamines

The drug methamphetamine was invented by a Japanese scientist Nagayoshi Nagai way back in 1893.

One of the first uses was by troops in World War II.

There is very strong evidence that Adolf Hitler became an extensive user after the Battle for Stalingrad.

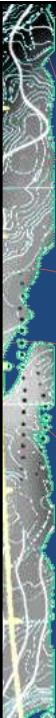


How Long has Meth and other Amphetamines been around?

Jan 18, 1887-Amphetamine was first synthesized by a German chemist

1919- Methamphetamine is first synthesized (in Japan)

WWII -Both Amphetamine and Methamphetamine (by the Japanese mostly)are widely distributed to soldiers to help improve performance. This led to addiction problems in Japan after the war.



Background

Methamphetamine is a synthetic stimulant commonly used as a recreational drug. It is legally prescribed as a treatment for ADD under the brand name Desoxyn, for both children and adults.

On the street, it is generally found as an odorless, white or off-white, bitter-tasting powder, though it is also found in pills, capsules and larger crystals.

Methamphetamine production is a relatively simple process, especially when compared to many other recreational drugs.

Slang

Nazi method: a method of quick cooking meth

Methamphetamine: meth, crystal meth, speed, ice, crank, glass, uppers, yaba, shabu shabu, tweak, go-fast, Hitler's Drug, Crazy Medicine

Speed : any amphetamine

Jacked: on speed



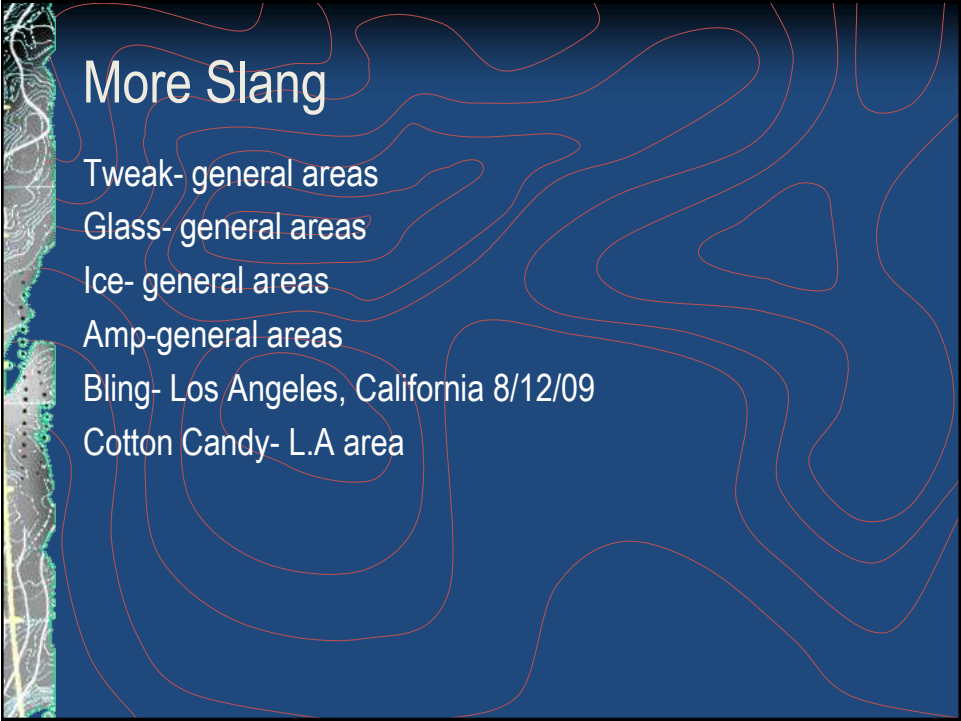
Slang

Bump: a snorted hit (average 2-4 "bumps")

An intentional binge: with some heavy users injection as much as a gram every 2-4 hours to keep things going

What is the difference between crystal and crank?..... "Crystal" has seven letters, "Crank" only has five.





More Slang

Tweak- general areas

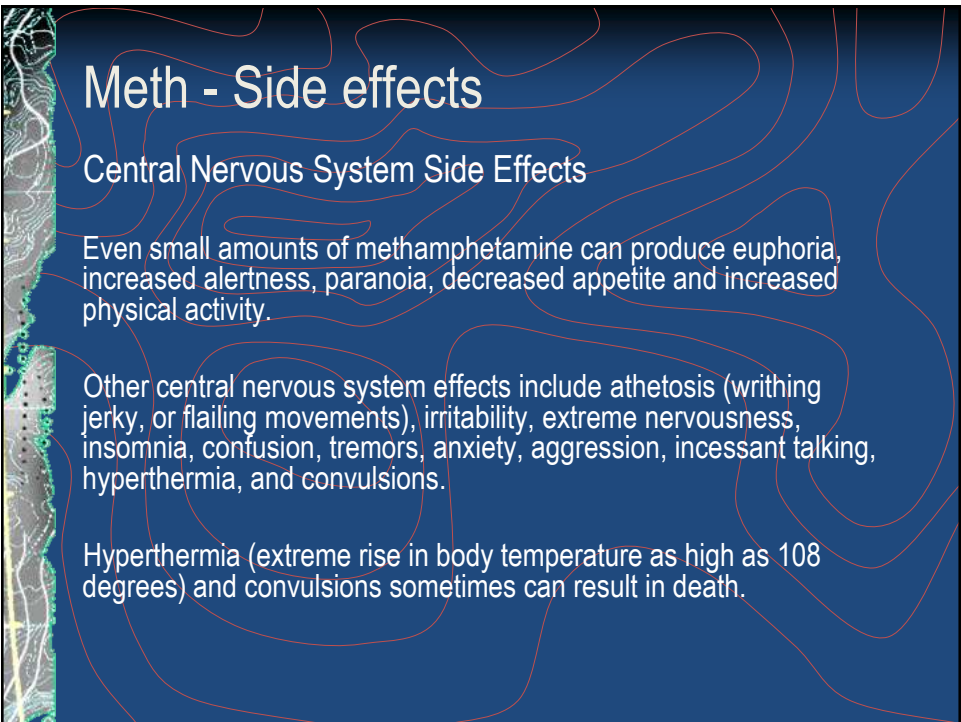
Glass- general areas

Ice- general areas

Amp-general areas

Bling- Los Angeles, California 8/12/09

Cotton Candy- L.A area



Meth - Side effects

Central Nervous System Side Effects

Even small amounts of methamphetamine can produce euphoria, increased alertness, paranoia, decreased appetite and increased physical activity.

Other central nervous system effects include athetosis (writhing jerky, or flailing movements), irritability, extreme nervousness, insomnia, confusion, tremors, anxiety, aggression, incessant talking, hyperthermia, and convulsions.

Hyperthermia (extreme rise in body temperature as high as 108 degrees) and convulsions sometimes can result in death.

Street values

\$1700 per ounce Meth is going for between \$6,500 to \$10,000 a pound

\$100 - \$180 for an 8th.

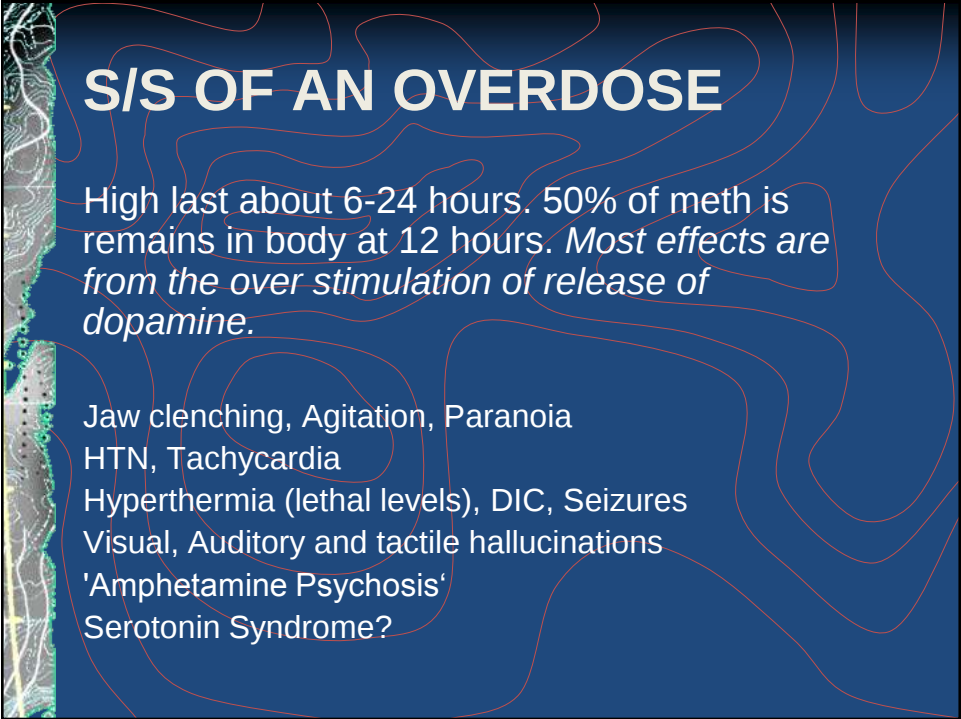
Methods of use

It is frequently snorted, but is also used orally, smoked, and injected.

Oral use takes about half an hour to produce effects.

When smoked, effects are almost instantaneous, and nearly as quick when snorted.





S/S OF AN OVERDOSE

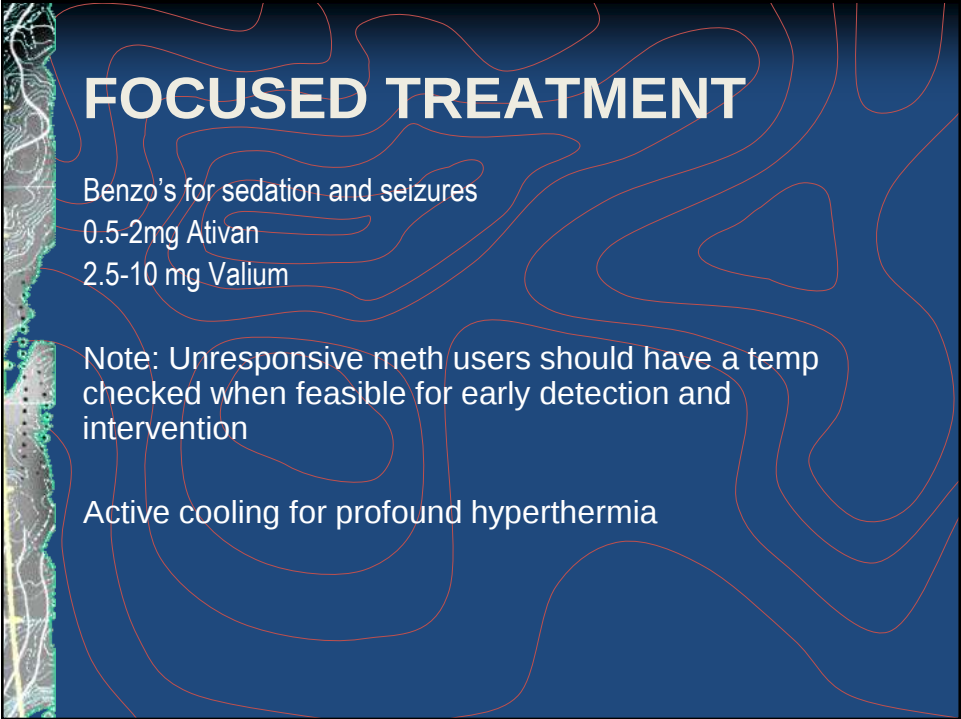
High last about 6-24 hours. 50% of meth is remains in body at 12 hours. *Most effects are from the over stimulation of release of dopamine.*

Jaw clenching, Agitation, Paranoia
HTN, Tachycardia
Hyperthermia (lethal levels), DIC, Seizures
Visual, Auditory and tactile hallucinations
'Amphetamine Psychosis'
Serotonin Syndrome?



BASIC TREATMENT

Supportive
ALS (EKG, IV)



FOCUSED TREATMENT

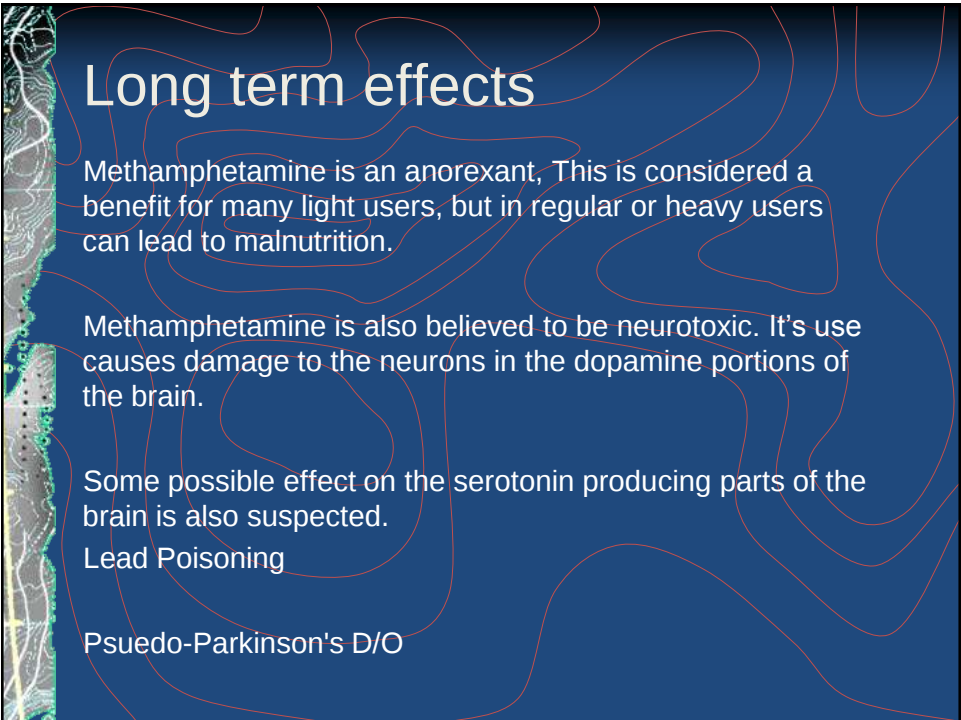
Benzo's for sedation and seizures

0.5-2mg Ativan

2.5-10 mg Valium

Note: Unresponsive meth users should have a temp checked when feasible for early detection and intervention

Active cooling for profound hyperthermia



Long term effects

Methamphetamine is an anorexant, This is considered a benefit for many light users, but in regular or heavy users can lead to malnutrition.

Methamphetamine is also believed to be neurotoxic. It's use causes damage to the neurons in the dopamine portions of the brain.

Some possible effect on the serotonin producing parts of the brain is also suspected.

Lead Poisoning

Pseudo-Parkinson's D/O

Dependence, Detox, and Withdrawal

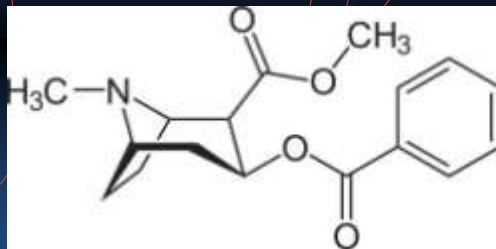
Methamphetamine causes significant tolerance, as well as psychological dependence

Strong cravings for more meth, while at the same time being unable to reach a satisfactory high

Withdrawal from high doses can produce severe depression, called the "Crash"

Crack-Bugs (formication)

Cocaine





Erythroxylon coca

Native to eastern slopes of Andes

Cocaine alkaloid serves as natural pesticide

Leaves contain 0.1-0.9% cocaine

www.cocaine.org

Cocaine Inc.



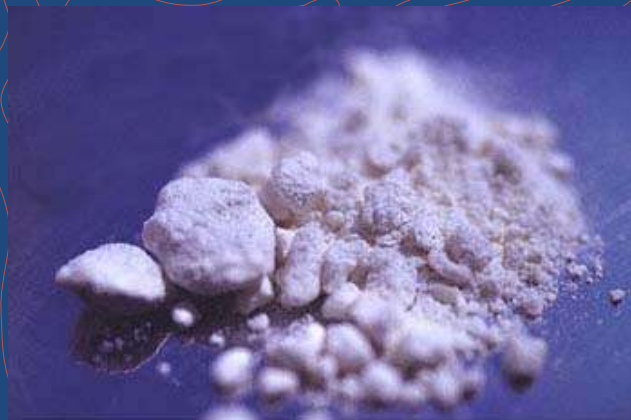
www.cocaine.org

Cocaine Inc.



www.cocaine.org

Cocaine Hydrochloride



www.cocaine.org

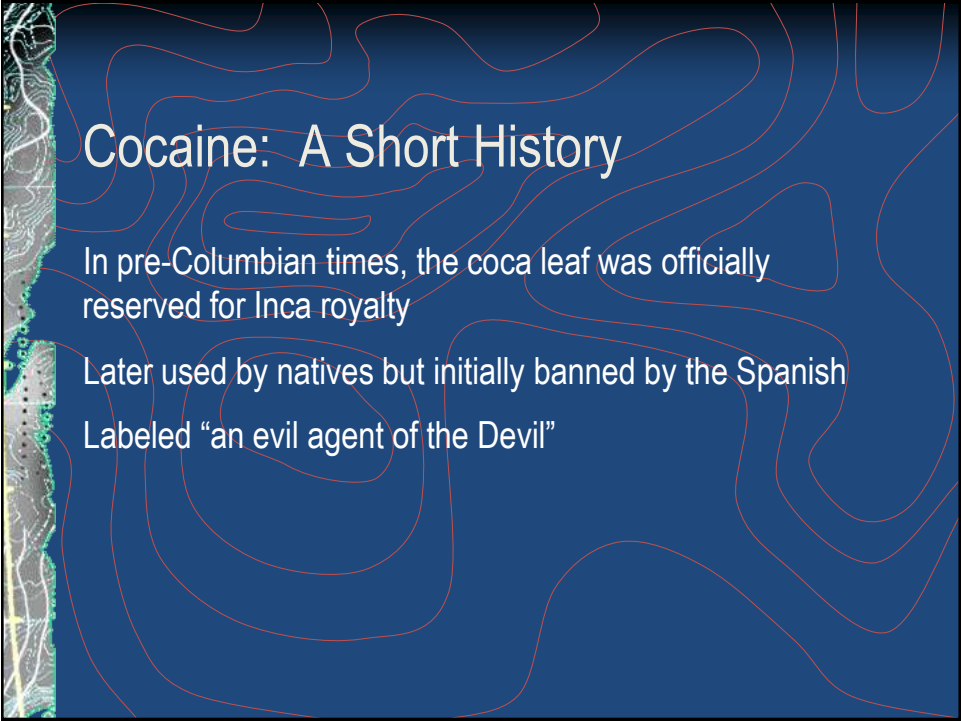
Street values

- Coke is \$23,000 to \$25,000 a kilo or
- \$140 - \$180 for an 8th.

Free-base cocaine: Crack



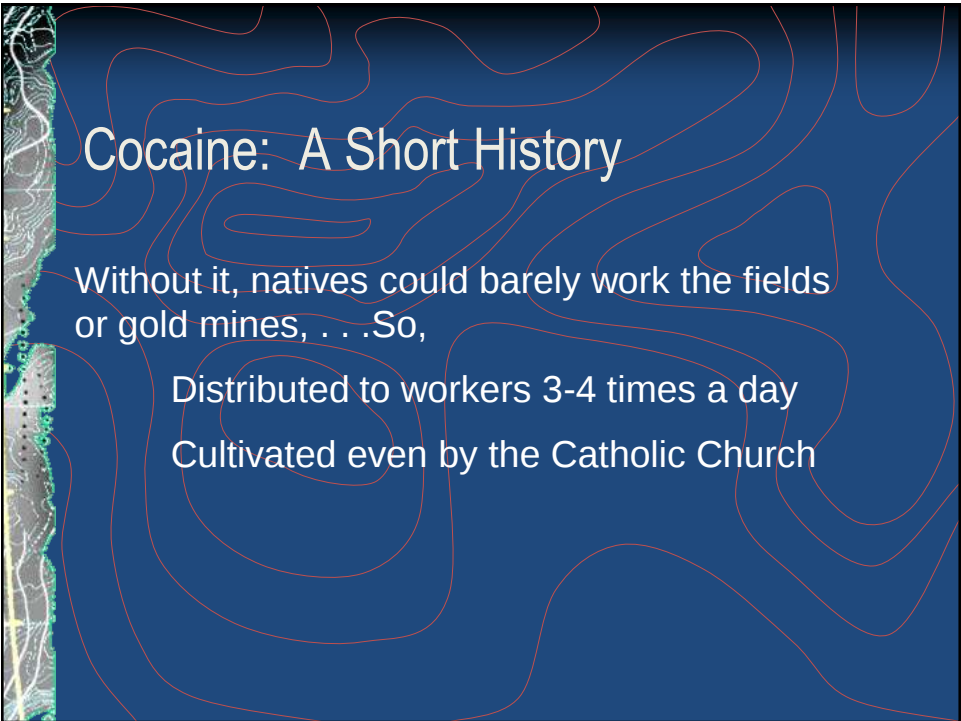
www.cocaine.org



Cocaine: A Short History

In pre-Columbian times, the coca leaf was officially reserved for Inca royalty

Later used by natives but initially banned by the Spanish
Labeled “an evil agent of the Devil”



Cocaine: A Short History

Without it, natives could barely work the fields or gold mines, . . . So,

Distributed to workers 3-4 times a day
Cultivated even by the Catholic Church

Cocaine: A Short History

Active ingredient isolated by Albert Niemann in 1860

Widely used recreationally and medicinally in late 1800's

The first cocaine cartel, the *Cocaine Manufacturers' Syndicate*, founded in 1910

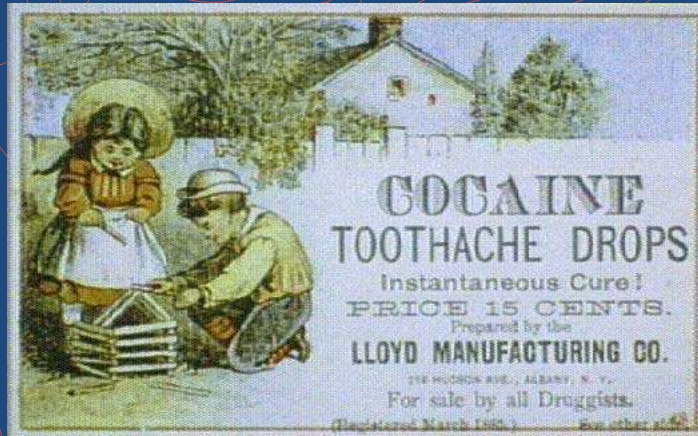
The First Cocaine Cartel



www.cocaine.org

Merck, along with Sandoz, and Hoffman-LaRoche

A Panacea for Your Ills

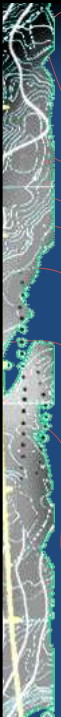


www.cocaine.org

A Panacea for Your Ills



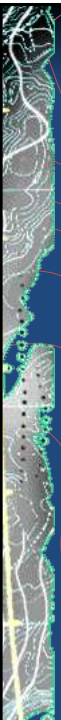
www.cocaine.org



A Panacea for Your Ills

“ sustains and refreshes both the body and brain. . .It may be taken at any time with perfect safety. . . It has been effectually proven that in the same space of time more than double the amount of work could be undergone when Peruvian Wine of Coca was used, and positively no fatigue experienced. . .”

Sears, Roebuck and Co. Consumers' Guide (1900)



A Panacea for Your Ills: Coca Wine Lovers

Anatole France
Henrik Ibsen
Jules Verne
Alexander Dumas
Robert L. Stephenson
Sir Arthur C. Doyle
Massenet
Gounod
Faure

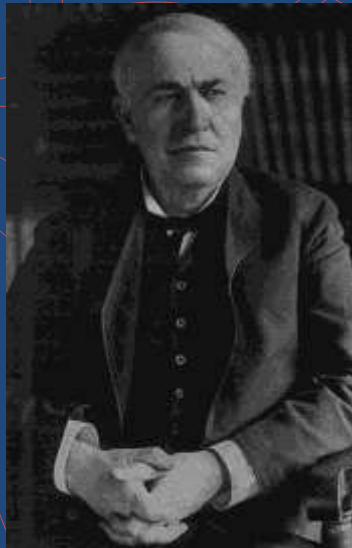
Queen Victoria
King George I (Greece)
King Alphonse XIII
Shah of Persia
William McKinley
Grand Rabbi of France
Pope Pius X
Pope Leo XIII

The Pope on Coke



www.cocaine.org

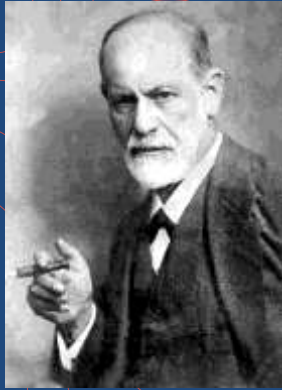
Enthusiastic Supporter of Cocaine



A coca leaf extract (cocaine) was made into a form of wine called **Vin Mariani**.

It was enthusiastically praised by Thomas Edison, Ulysses S. Grant, and Pope Leo XIII who was so taken with it that he had a special Vatican medal issued in its praise.

Sigmund Freud's Early Views on Cocaine



Freud recommended seven conditions for which cocaine therapy might prove valuable:

1. as a mental stimulant
2. as a possible treatment for digestive disorders
3. as an appetite stimulant in case of wasting diseases
4. **as a treatment for morphine and alcohol addiction**
5. as a treatment for asthma
6. as an aphrodisiac
7. as a local anesthetic

It was Freud's fourth recommendation that caused the most controversy. Cocaine is no longer prescribed as an antidote to morphine addiction.

"...exhilaration and lasting euphoria, which in no way differs from the normal euphoria of the healthy person... You perceive an increase of self-control and possess more vitality and capacity for work....In other words, you are simply normal, and it is soon hard to believe you are under the influence of any drug....Long intensive physical work is performed without any fatigue...This result is enjoyed without any of the unpleasant after-effects that follow exhilaration brought about by alcohol....Absolutely no craving for the further use of cocaine appears after the first, or even after repeated taking of the drug..."

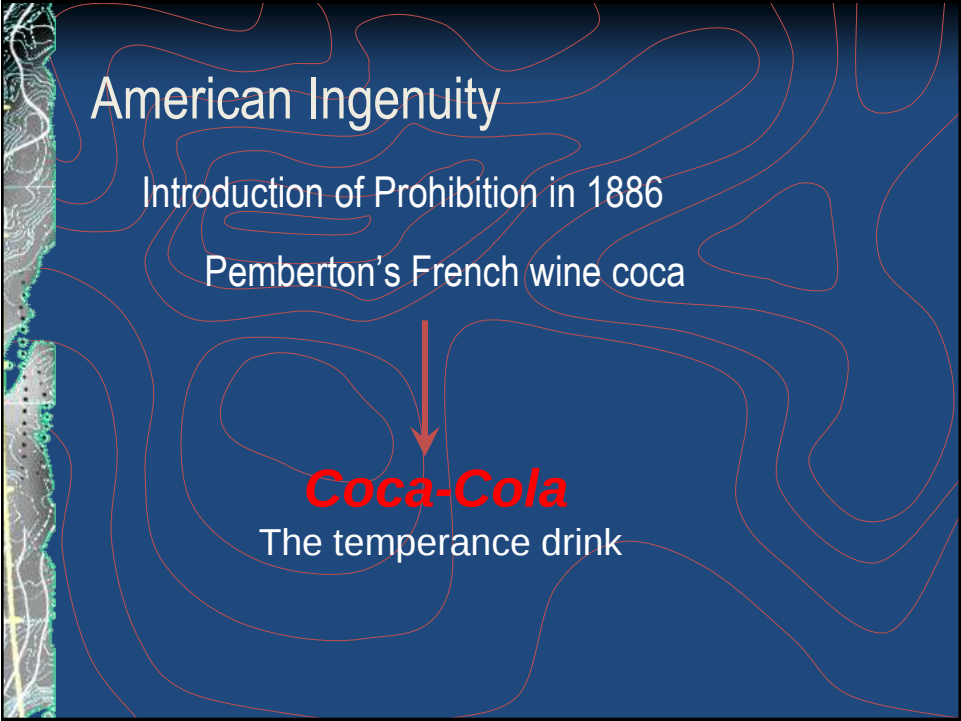
American Ingenuity

❖ John Pemberton (1832-1888)

Pemberton's French wine coca

"an intellectual beverage"

"a most wonderful invigorator of the sexual organs"



American Ingenuity

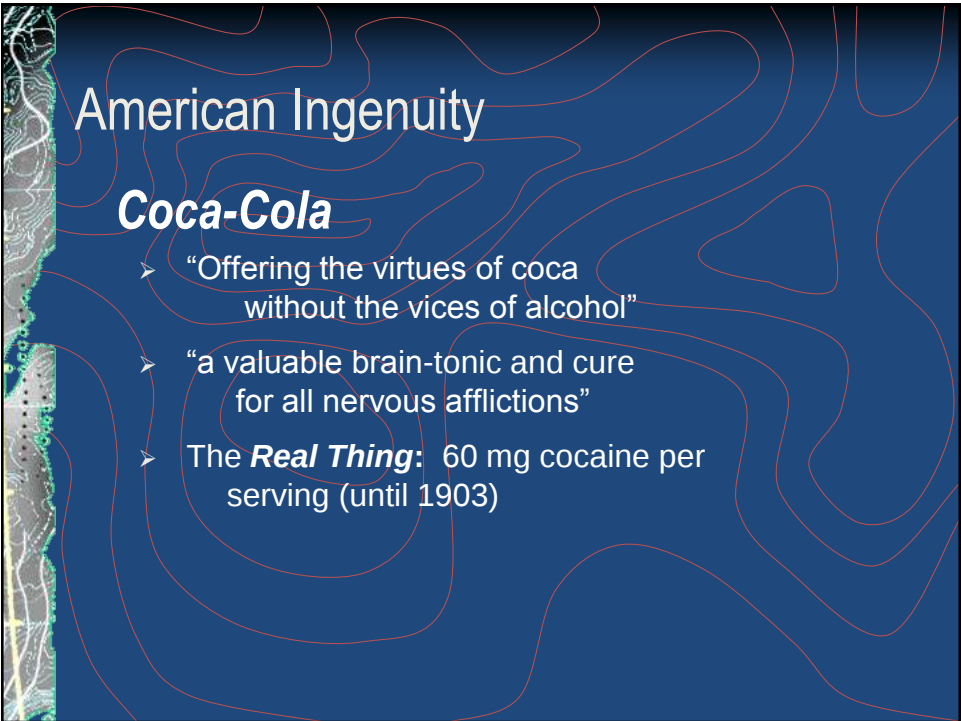
Introduction of Prohibition in 1886

Pemberton's French wine coca



Coca-Cola

The temperance drink

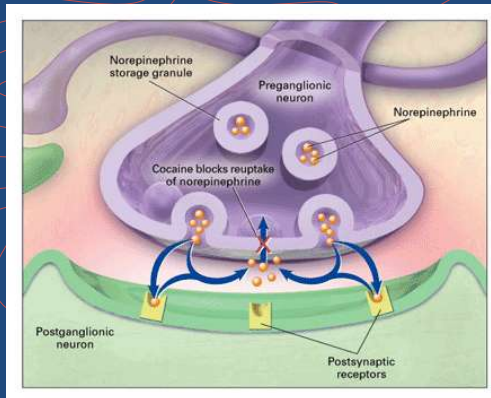


American Ingenuity

Coca-Cola

- “Offering the virtues of coca without the vices of alcohol”
- “a valuable brain-tonic and cure for all nervous afflictions”
- The ***Real Thing***: 60 mg cocaine per serving (until 1903)

Mechanism of Action



Cocaine blocks the presynaptic reuptake of NE and dopamine, producing an excess of these neurotransmitters at the postsynaptic receptor site, thereby acting as a powerful sympathomimetic agent

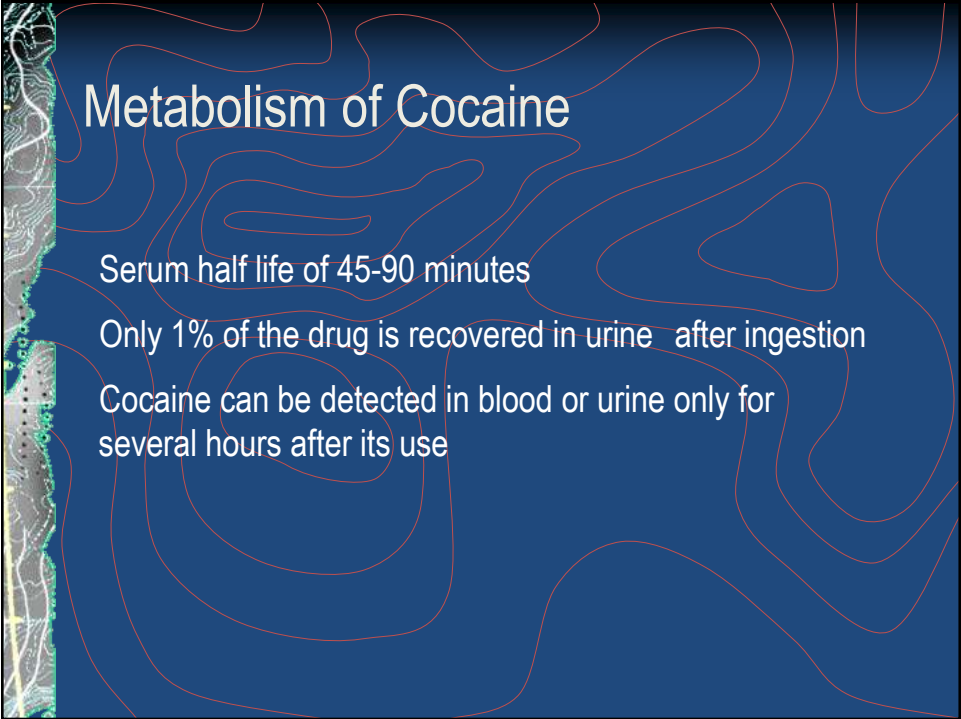
NEJM, 345:351, 2001

Pharmacokinetics of Cocaine

TABLE 1. PHARMACOKINETICS OF COCAINE ACCORDING TO THE ROUTE OF ADMINISTRATION.

ROUTE OF ADMINISTRATION	ONSET OF ACTION	PEAK EFFECT	DURATION OF ACTION
Inhalation (smoking)	3–5 sec	1–3 min	5–15 min
Intravenous	10–60 sec	3–5 min	20–60 min
Intranasal or other mucosal	1–5 min	15–20 min	60–90 min

NEJM, 345:351, 2001



Metabolism of Cocaine

Serum half life of 45-90 minutes

Only 1% of the drug is recovered in urine after ingestion

Cocaine can be detected in blood or urine only for several hours after its use



Metabolism of Cocaine

Cocaine metabolites are detectable for 2-5 days

Hair analysis provides a very sensitive marker for cocaine use within the preceding weeks to months

Excited Delirium



Bells Mania

First reported in 1849 by Dr. Luther Bell. Seen in the mentally ill, patients would become delirious for days with the condition likely to terminate in death.

The chronic form almost disappeared in the 1950's with the advent of antipsychotic medications

The acute form arose in the 1980's with the increasing use of stimulants and cocaine.

Signs of Excited Delirium



In excited delirium the patient will continue to resist even when hopelessly restrained

Excited Delirium Mnemonic

- N:** Patient is naked and sweating from hyperthermia
- O:** Patient exhibits violence against objects, especially glass
- T:** Patient is tough and unstoppable, with superhuman strength and insensitivity to pain
- A:** Onset is acute (e.g., witness say the patient "just snapped!")
- C:** Patient is confused regarding time, place, purpose and perception
- R:** Patient is resistant and won't follow commands to desist
- I:** Patient's speech is incoherent, often with loud shouting and bizarre content
- M:** Patient exhibits mental health conditions or makes you feel uncomfortable
- E:** EMS should request early backup and rapid transport to the ED

Underlying Medical Conditions

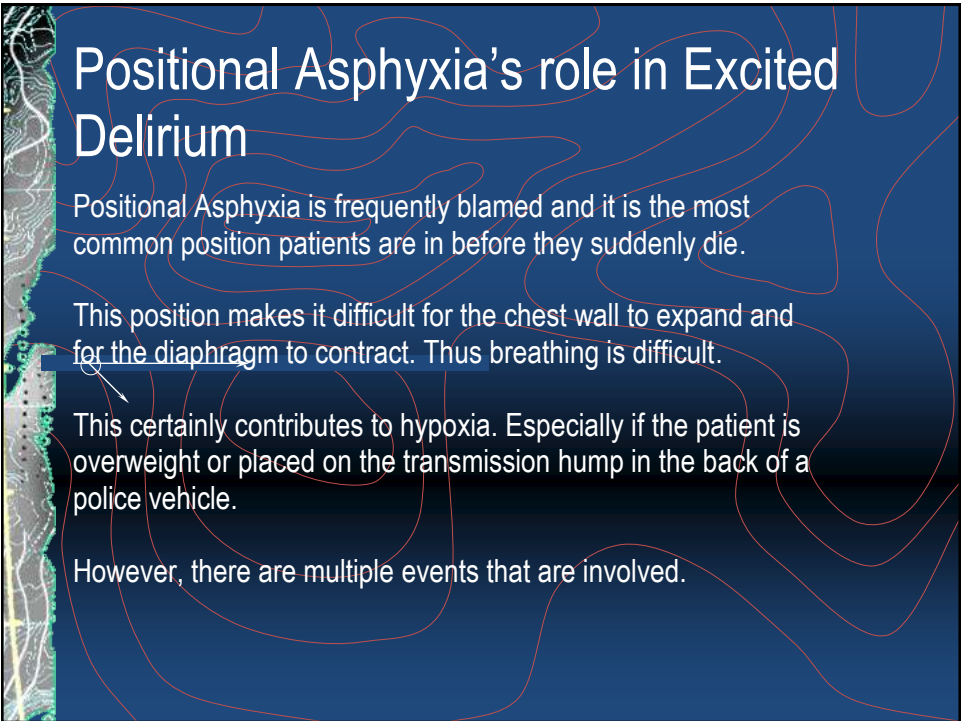
Things which place the patient at increased risk of excited delirium and sudden death with exertion:

- Cardiac Disease
- Psychiatric Conditions with Mania Or Psychosis
- Pulmonary Disease
- Stimulant Use or Abuse



Differential Diagnosis

Acute Psychosis
Bipolar Disorder
Emotional Rage
Heat Stroke
Hypoglycemia
Neuroleptic Malignant Syndrome
Serotonin Syndrome
Stimulant Overdose



Positional Asphyxia's role in Excited Delirium

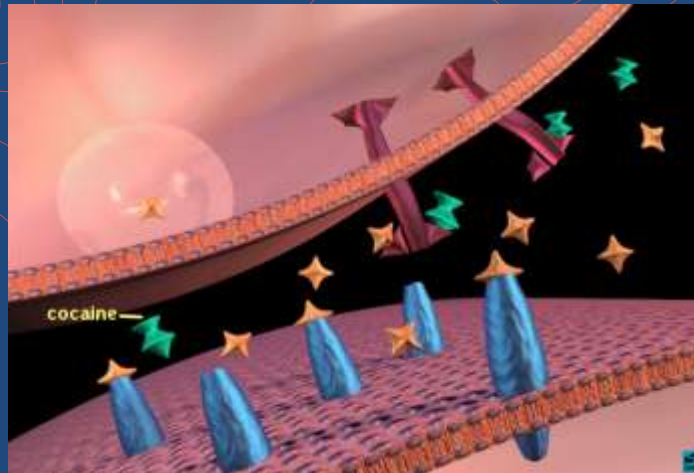
Positional Asphyxia is frequently blamed and it is the most common position patients are in before they suddenly die.

This position makes it difficult for the chest wall to expand and for the diaphragm to contract. Thus breathing is difficult.

This certainly contributes to hypoxia. Especially if the patient is overweight or placed on the transmission hump in the back of a police vehicle.

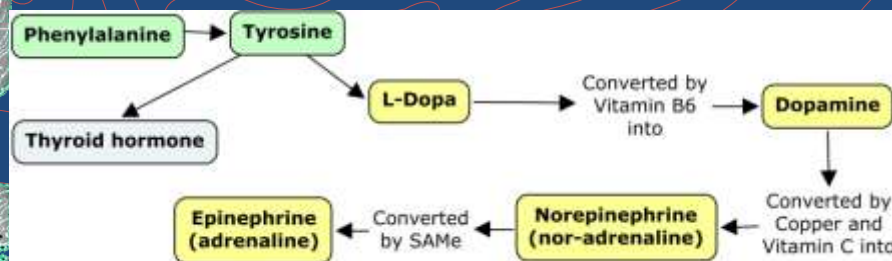
However, there are multiple events that are involved.

Mechanism of Action

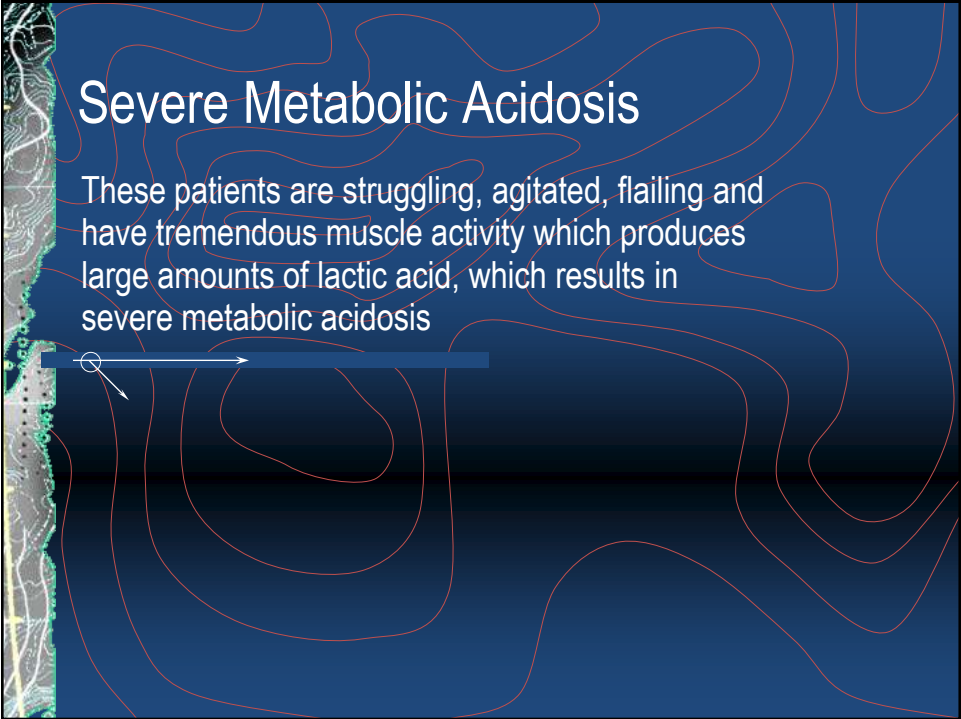


Massive Dopamine Surge

Cascade of Sympathetic Activity

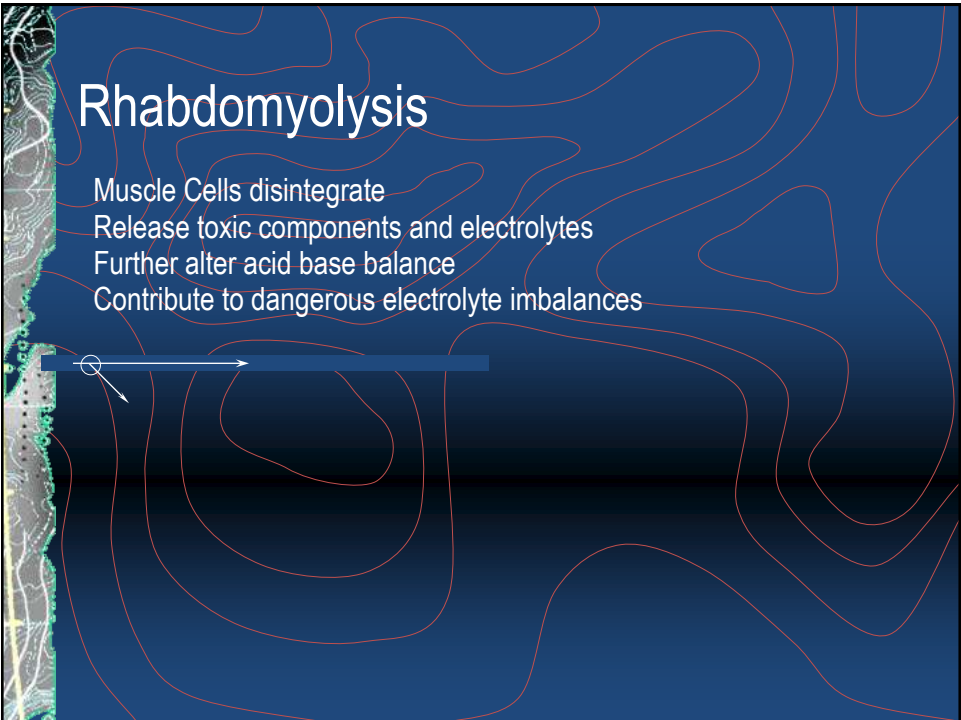


Severe Metabolic Acidosis
Rhabdomyolysis
Hyperkalemia
Hyperthermia
Hypoxia



Severe Metabolic Acidosis

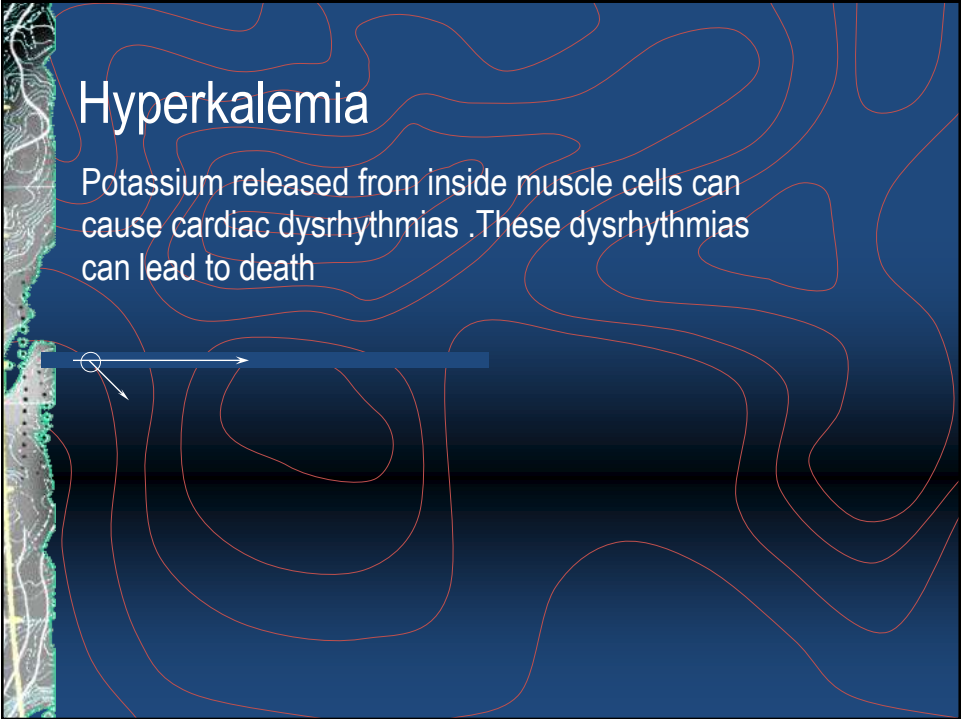
These patients are struggling, agitated, flailing and have tremendous muscle activity which produces large amounts of lactic acid, which results in severe metabolic acidosis



Rhabdomyolysis

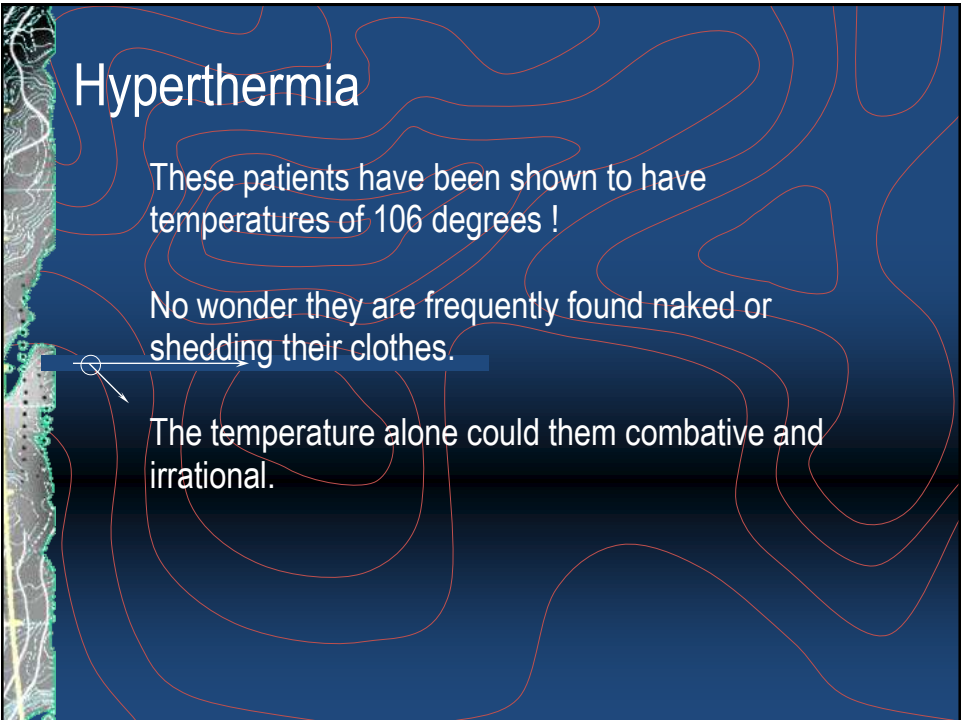
Muscle Cells disintegrate
Release toxic components and electrolytes
Further alter acid base balance
Contribute to dangerous electrolyte imbalances





Hyperkalemia

Potassium released from inside muscle cells can cause cardiac dysrhythmias. These dysrhythmias can lead to death



Hyperthermia

These patients have been shown to have temperatures of 106 degrees !

No wonder they are frequently found naked or shedding their clothes.

The temperature alone could them combative and irrational.

Hypoxia

Mix together stimulant use, acidosis, electrolyte disturbances like hyperkalemia, Rhabdomyolysis, hyperthermia and add hypoxia and you get... sudden death?



Challenges in Excited Delirium

Cardiac arrest from excited delirium is almost always fatal, Prehospital care should focus on preventing cardiac arrest which is almost always fatal.

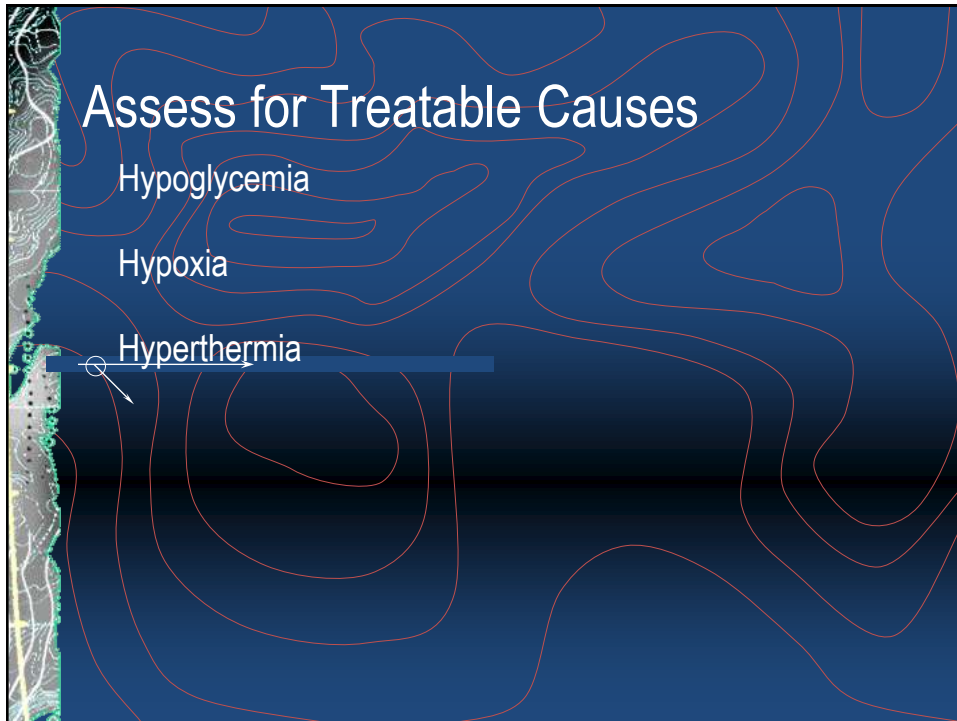
These are:

Increased metabolic activity,

Hyperthermia

Hyperkalemia,





Restraint

Physical

The patient must be restrained first, so you don't get hurt and they don't hurt themselves!

“Recent studies show that the physical struggle is a much greater contributor to the increase in catecholamine surge and metabolic acidosis than the other causes of exertion or noxious stimuli”

...AECF Task Force

Sedation !

Class	Agent (Trade Name)	Available Routes	Dosing (mg)*	Onset (min)	Duration (min)
Midazolam (Versed)		IN	5	3-5	30-60
		IM	5	10-15	120-360
		IV	2-5	3-5	30-60
Lorazepam (Ativan)		IM	4	15-30	60-120
		IV	2-4	2-5	60-120
Diazepam (Valium)		IM	10	15-30	15-60
		IV	5-10	2-5	15-60
† Haloperidol (Haldol)		IM	10-20	15	180-360
		†† IV	5-10	10	180-360
† Droperidol (Inapsine)		IM	5	20	120-240
		IV	2.5	10	120-240
Ziprasidone (Geodon)		IM	10-20	10	240
Olanzapine (Zyprexa)		IM	10	15-30	24 hrs
Ketamine (Ketaset, Ketalar)		IM	4-5 mg/kg	3-5	60-90
		IV	2 mg/kg	1	20-30

Cooling

Cooling is critical

IV Fluids

Limit Activity

Ice Packs Groin and Axilla



Empiric Treatment for Metabolic Acidosis

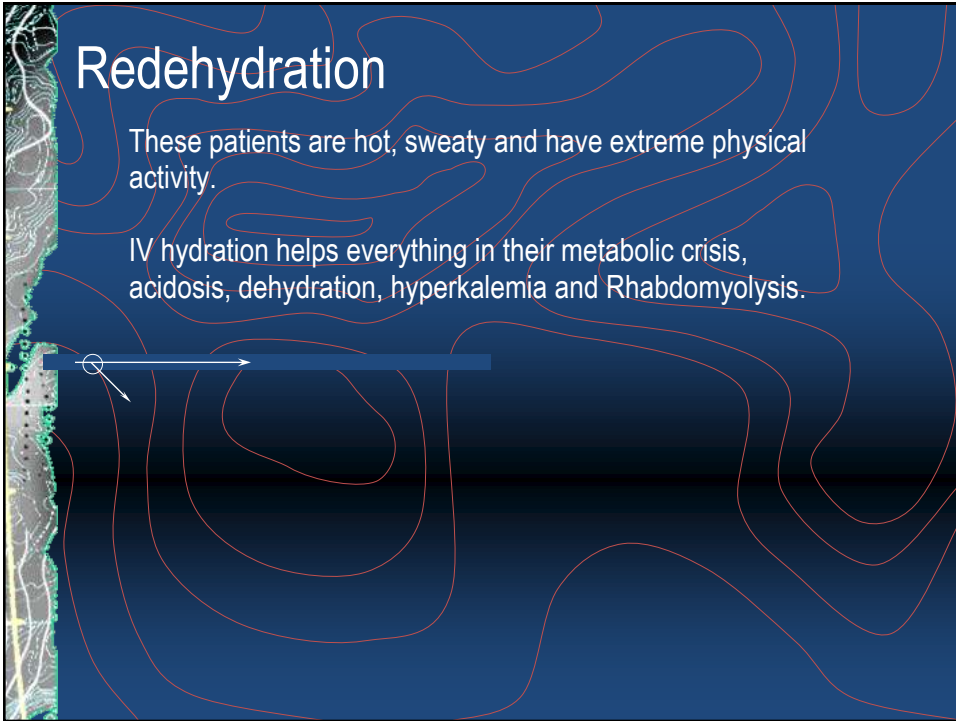
"Controversy exists regarding empiric use of sodium bicarbonate; the efficacy of supplemental sodium bicarbonate is unknown."ACEP Taskforce



Redehydration

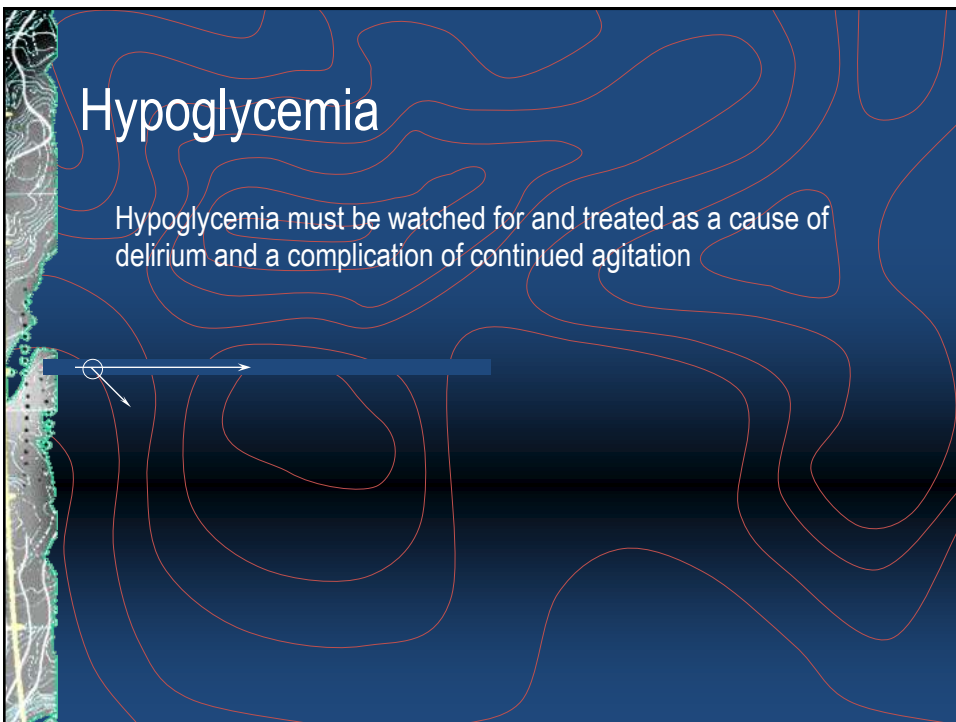
These patients are hot, sweaty and have extreme physical activity.

IV hydration helps everything in their metabolic crisis, acidosis, dehydration, hyperkalemia and Rhabdomyolysis.

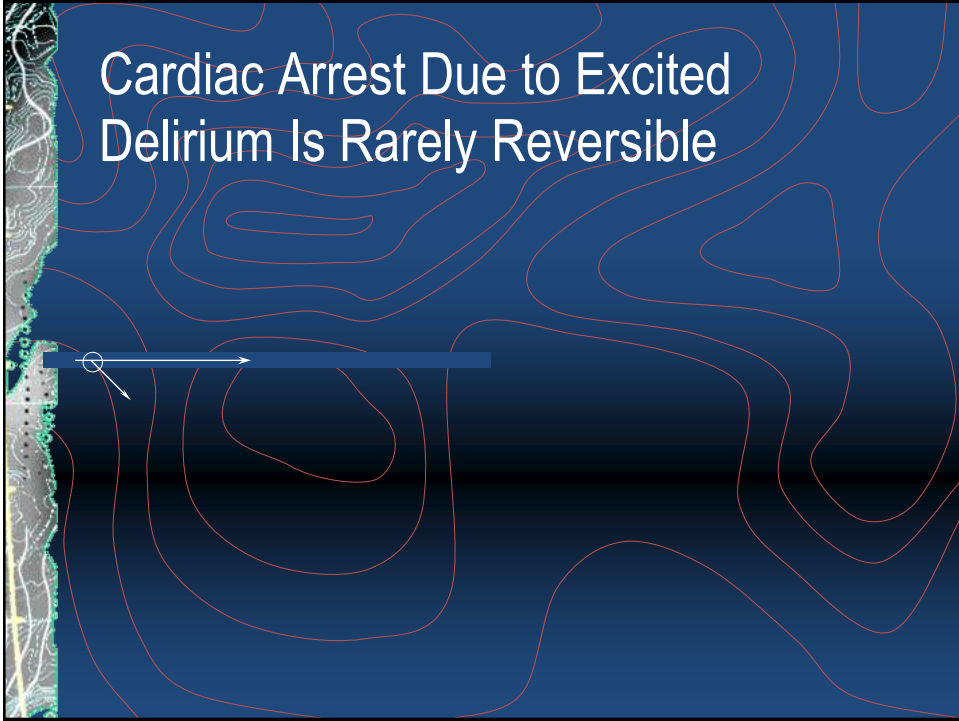


Hypoglycemia

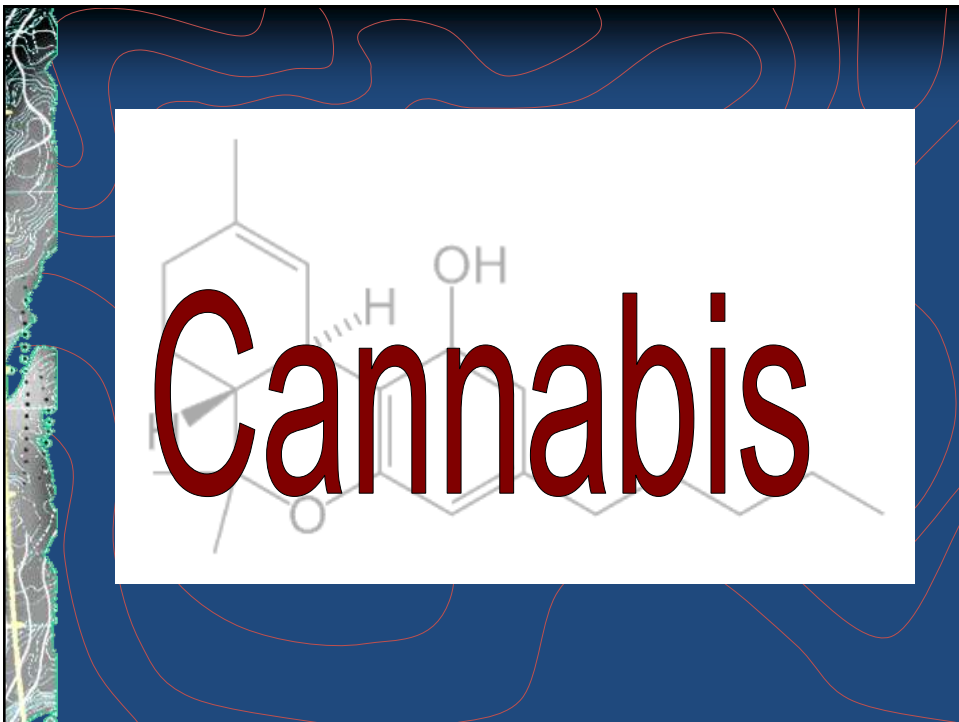
Hypoglycemia must be watched for and treated as a cause of delirium and a complication of continued agitation



Cardiac Arrest Due to Excited
Delirium Is Rarely Reversible



CC1=C(C(=C(C=C1)OC2C(C(C(C2)O)C)C)C)C
Cannabis



Marijuana

- Aka; weed, bud, gonja, Mary Jane, pot, grass, herb, kush, chronic , 420, dope
- Discovered by the ancient Chinese
- Can be smoked, or ingested
- There are two different kinds of “weed” used for their psychoactive effect,
 - cannabis indica
 - cannabis sativa.

Marijuana Potency

The three main forms of cannabis products are

- The herb (marijuana),
5% THC content
- Resin (hashish),
20% THC content
- Oil (hash oil).
60% THC content



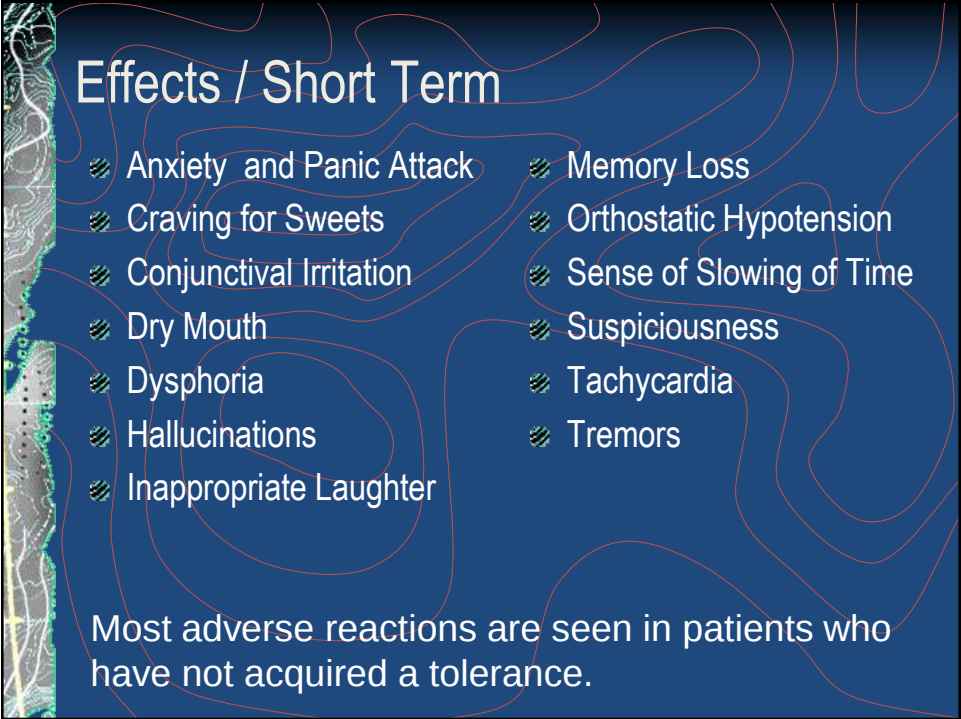
Marijuana Potency

Electric atomizer with “Earwax” (High Potency, made with butane)



Marijuana – Psychedelic, Stimulant, Depressant, and Anti-inflammatory

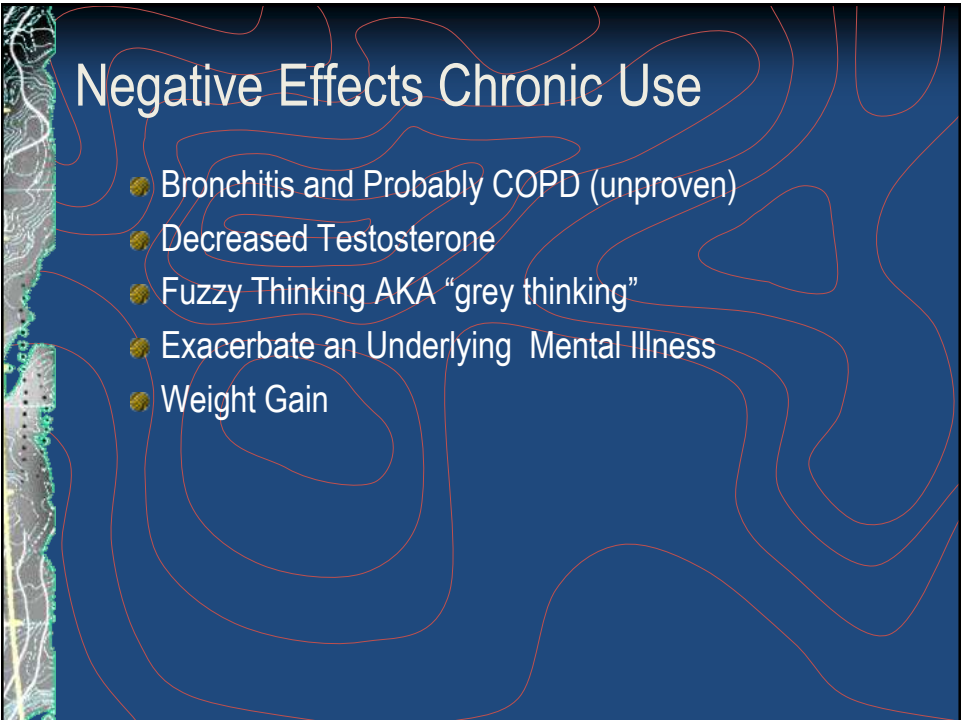
- THC binds to the cannabinoid receptors located in the CNS
- THC binds to CB2 receptors, mainly present in cells of the immune system
- It acts as a partial agonist on both receptors, i.e., it activates them but not to their full extent.
- The psychoactive effects of THC are mediated by its activation of the CB1 receptor, which is in the brain.



Effects / Short Term

- Anxiety and Panic Attack
- Craving for Sweets
- Conjunctival Irritation
- Dry Mouth
- Dysphoria
- Hallucinations
- Inappropriate Laughter
- Memory Loss
- Orthostatic Hypotension
- Sense of Slowing of Time
- Suspiciousness
- Tachycardia
- Tremors

Most adverse reactions are seen in patients who have not acquired a tolerance.

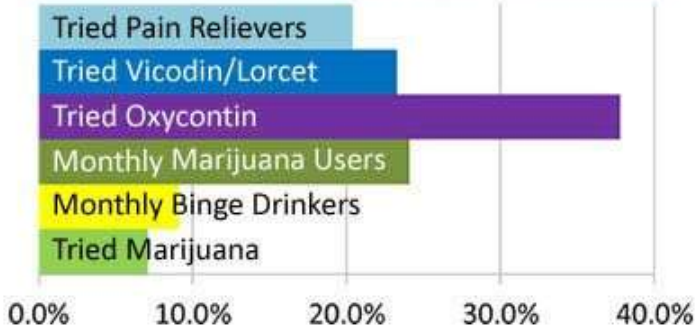


Negative Effects Chronic Use

- Bronchitis and Probably COPD (unproven)
- Decreased Testosterone
- Fuzzy Thinking AKA "grey thinking"
- Exacerbate an Underlying Mental Illness
- Weight Gain

Gateway Drug ?

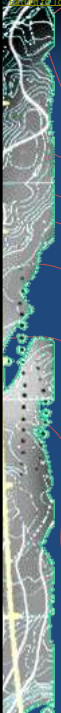
MONTHLY USE OF ILLEGAL DRUGS (BESIDES MARIJUANA) BY LIFETIME DRUG USE CHOICES (AKA MARIJUANA'S A LOUSY GATEWAY)



Gateway Drug ?

Substance Abuse Mental Health Data Archive, [National Survey on Drug Use and Health, 2009](#)

[VARIABLES]	PERSONS WHO HAVE TRIED / USE THESE DRUGS					
MONTHLY USE OF =====	[MRJFLA G] Marijuana (Ever)	[BINGEDR K] Binge Drinkers (Monthly)	[MRJMO N] Marijuan a (Monthly)	[OXYFLA G] Oxycontin (Ever)	[VICOLOR 2] Vicodin (Ever)	[ANLFLA G] Analgesic s (Ever)
[COCMON] Cocaine	1.5%	2.3%	5.4%	7.2%	4.1%	2.9%
[ECSMON] Ecstasy	0.7%	1.0%	3.6%	3.1%	1.9%	1.4%
[CRKMON] Crack	0.4%	0.6%	1.5%	2.5%	1.4%	1.0%
[MTHMON] Meth	0.4%	0.5%	1.8%	3.4%	1.4%	1.1%
[HERMON] Heroin	0.2%	0.2%	0.5%	2.3%	0.6%	0.5%
[LSDMON] LSD	0.1%	0.2%	0.8%	0.6%	0.4%	0.3%
[PCPMON] PCP	0.1%	0.1%	0.3%	0.2%	0.2%	0.1%
[IEMMON] Any Illegal Drug Except Marijuana	7.1%	9.1%	24.1%	37.8%	23.3%	20.4%

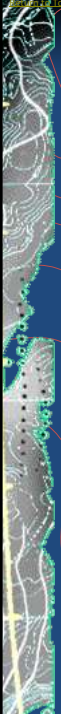


Not Strictly Harmless ?

No substantiated deaths due to overdose

The data suggest that the development or recurrence of acute psychosis in the context of cannabis use may be associated with a genetic predisposition to schizophrenia.

P.K. McGuire *Schizophrenia Research* [Volume 15, Issue 3](#), Pages 277-281, May 1995



Not Strictly Harmless

Human studies have found that pot smokers suffer similar kinds of respiratory damage as tobacco smokers, putting them at greater risk of bronchitis, sore throat, respiratory inflammation and infections.

While it has not been conclusively proven that marijuana smoking causes lung cancer, the evidence is highly suggestive. According to Dr. Donald Tashkin of UCLA, the leading expert on marijuana smoking. Yet contrary data also exists making this issue less clear.

Substance Abuse Mental Health Data Archive, [National Survey on Drug Use and Health](#), 2009

California

In 1996, 56% of Californians voted "Yes" on "Proposition 215". This made it legal for patients to be prescribed marijuana for medicinal use.

In 2010 53.7% of Californians voted "No" on "Proposition 19". This would have made recreational use of marijuana legal. Neither proposition would affect federal law.



California

Nobody even knows how many medical marijuana dispensaries are in Los Angeles. Estimates range from 500 to more than 1,000. The only certainty, supporters and opponents agree, is that they far outnumber Starbucks.....New York Times 3/24/2013



WeedMap.com search on 3/24/2013

Economic Impact in California

Rank	Crop	Unit	Planted Area (000) Acres	Harvested Area (000) Acres	Yield Per Acre	Production (000) Units	1997 Street Price Per Unit Dollars	Value of Production (000) Dollars
1	Marijuana	Lb	N/A	N/A	N/A	1,300	\$2,976	\$3,870,000
2	Grapes, All	Ton	N/A	668	9.28	6,196	\$424,000	\$2,627,104
3	Almonds	Lb	N/A	420	1,786.00	750,000	\$1.550	\$1,162,500
4	Hay, All	Ton	N/A	1,500.00	5.74	8,616	\$123.000	\$1,059,768
5	Cotton, Upland	Lb	880	875	1,207.00	1,056,000	\$0.737	\$778,272
6	Oranges, All	Box	N/A	199	342	68,000	\$9.400	\$639,200
7	Walnuts	Ton	N/A	170	1.58	269	\$1,310.000	\$352,390
8	Rice, All	Cwt	512	510	8,300.00	42,341	\$8.200	\$347,196
9	Apples, All Commercial	Lb	N/A	38.5	25,300.00	975,000	\$0.332	\$323,700
10	Lemons	Box	N/A	46.5	430	20,000	\$13.290	\$265,800

Indica's

A smaller and more husky plant

Great for relaxation because of the mental high given, would be good for stress and/ or anxiety.

Will give the "couch lock effect making getting off the couch almost impossible



Sativa's

The "upper" high, it is a more energetic and uplifting high. It is the daytime high

It is a more tall and thinner plant

Less potent than the indica's



Marijuana street prices

Retail prices range varies usually from \$ 35 a gram to \$85 a gram for super top self-quality



WEED

Helping Americans learn the Metric System

GoEdHumbler.com
©2004 Ed Humbler

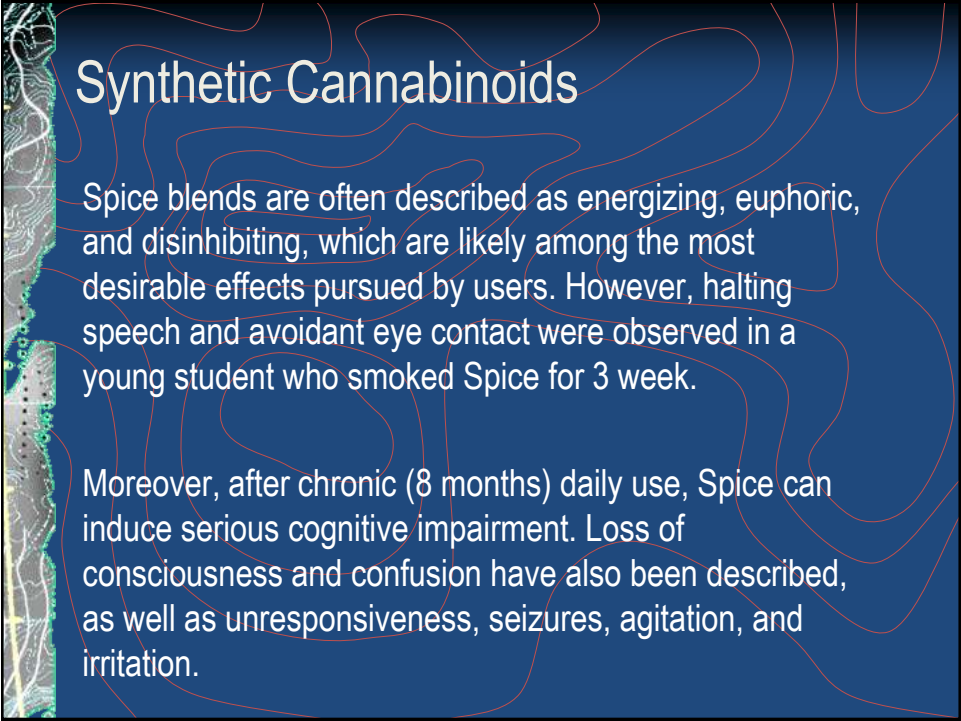
Synthetic Cannabinoids

Spice is described by users as able to exert strong cannabis-like effects, but inter- and intra-batch variations, both in terms of substances present and their quantity, have also resulted in accidental overdosing that requires hospitalization



Synthetic Cannabinoids

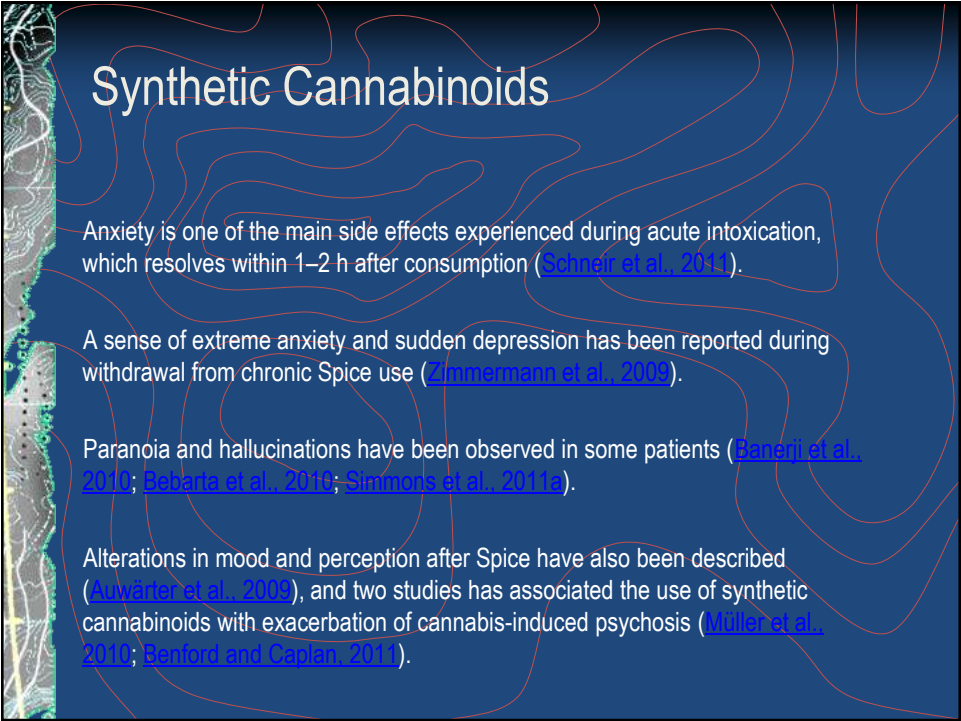
Worryingly, very little is known about its pharmacology and toxicology in humans, and virtually nothing has been investigated thus far about the health implications of its use, either in humans or animals, which hampers appropriate medical treatment of Spice-induced side effects.



Synthetic Cannabinoids

Spice blends are often described as energizing, euphoric, and disinhibiting, which are likely among the most desirable effects pursued by users. However, halting speech and avoidant eye contact were observed in a young student who smoked Spice for 3 week.

Moreover, after chronic (8 months) daily use, Spice can induce serious cognitive impairment. Loss of consciousness and confusion have also been described, as well as unresponsiveness, seizures, agitation, and irritation.



Synthetic Cannabinoids

Anxiety is one of the main side effects experienced during acute intoxication, which resolves within 1–2 h after consumption ([Schner et al., 2011](#)).

A sense of extreme anxiety and sudden depression has been reported during withdrawal from chronic Spice use ([Zimmermann et al., 2009](#)).

Paranoia and hallucinations have been observed in some patients ([Banerji et al., 2010](#); [Bakara et al., 2010](#); [Simmons et al., 2011a](#)).

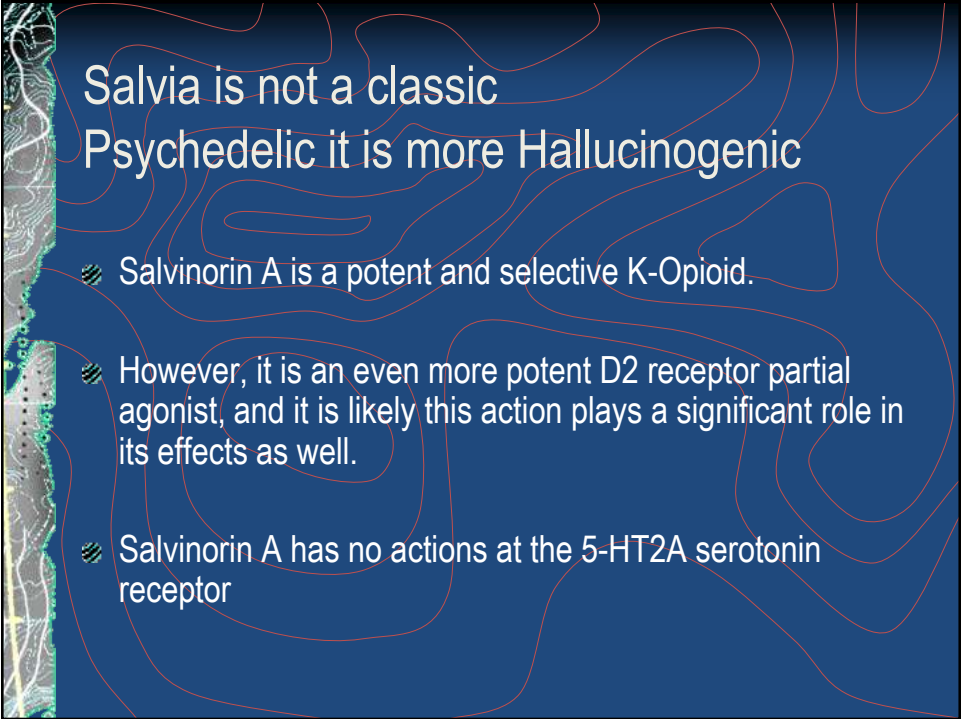
Alterations in mood and perception after Spice have also been described ([Auwarter et al., 2009](#)), and two studies has associated the use of synthetic cannabinoids with exacerbation of cannabis-induced psychosis ([Müller et al., 2010](#); [Benford and Caplan, 2011](#)).



Salvia facts

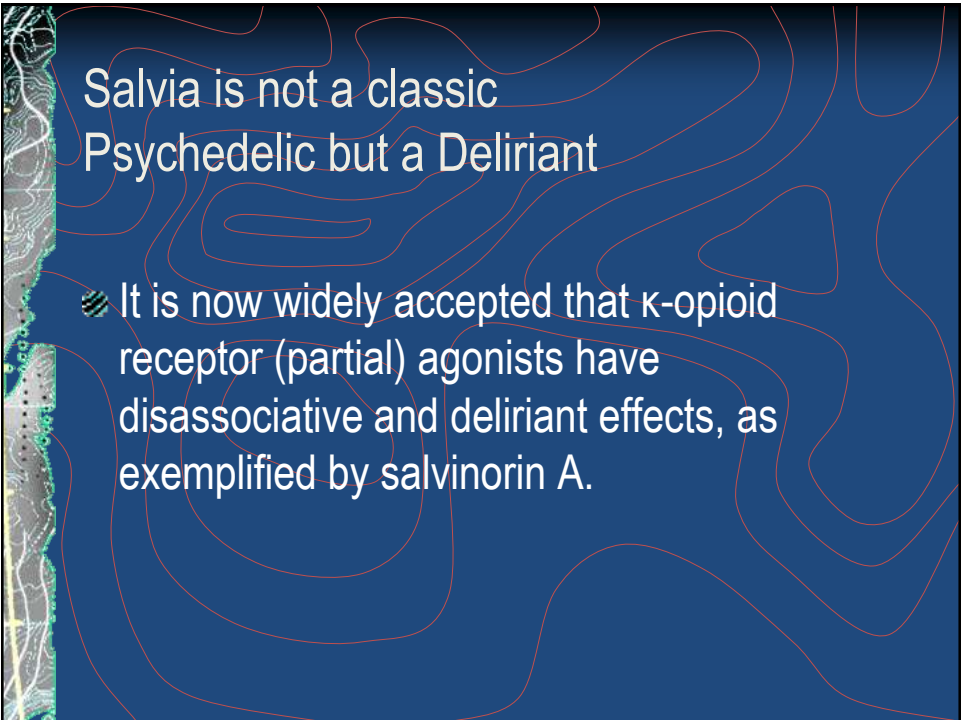
- 100% legal high
- Full name is salvia divinorum
- Salvia is a psychotropic plant originally from Oaxaca, Mexico.
- Salvia can be bought at pretty much any pipe or “head” shop





Salvia is not a classic Psychedelic it is more Hallucinogenic

- Salvinorin A is a potent and selective K-Opioid.
- However, it is an even more potent D2 receptor partial agonist, and it is likely this action plays a significant role in its effects as well.
- Salvinorin A has no actions at the 5-HT_{2A} serotonin receptor



Salvia is not a classic Psychedelic but a Deliriant

- It is now widely accepted that κ -opioid receptor (partial) agonists have disassociative and deliriant effects, as exemplified by salvinorin A.

Effects

- ✦ Loss of physical coordination
- ✦ **Uncontrollable laughter**
- ✦ Visual alterations or visions
- ✦ Experiencing multiple realities
- ✦ A contemplative sense of peace
- ✦ Sense of profound understanding
- ✦ Dream-like veneer over the world
- ✦ Sense of total confusion or madness
- ✦ Seeing or becoming part of a tunnel
- ✦ Loss of sense of awareness as an individual
- ✦ Experiencing a “non-Euclidean” geometry
- ✦ Sense of flying, floating, twisting, or turning
- ✦ Feeling of being immersed in an energy field



Effects The famous salvia-researcher Daniel Siebert made up a scale for the strength of a salvia experience. His S-A-L-V-I-A scale shows 6 trip stages:

- ✦ **S - SUBTLE** effects. Relaxation and increased sensual appreciation may be noted. This mild level is useful for meditation and may facilitate sexual pleasure.
- ✦ **A - ALTERED** perception; colors and textures are paid attention to. Thinking becomes less logical, and more playful.
- ✦ **L - LIGHT** visionary state. Closed eye visuals (clear imagery with eyes closed).
- ✦ **V - VIVID** visionary state. Complex three dimensional realistic appearing scenes occur. With eyes closed you experience fantasies. So long as your eyes are closed you may believe they are really occurring.
- ✦ **I - IMMATERIAL** existence. Individuality may be lost; one experiences merging with the Divine.
- ✦ **A - AMNESIC** effects. Loss of consciousness. The individual may fall, or remain immobile or thrash around. Dangerous!

Salvia quid (sublingual)

- Chewing can give an interesting, although different experience, from that obtained from smoked salvia: more gentle and longer.
- The salvinorin A is slowly absorbed by the sublingual mucosa and into the bloodstream. The effects will come on more slowly (after 10-20 minutes), reaching a peak quite quickly, and then continue for around 30 minutes. In the next 30 to 90 minutes the effects will slowly fade.

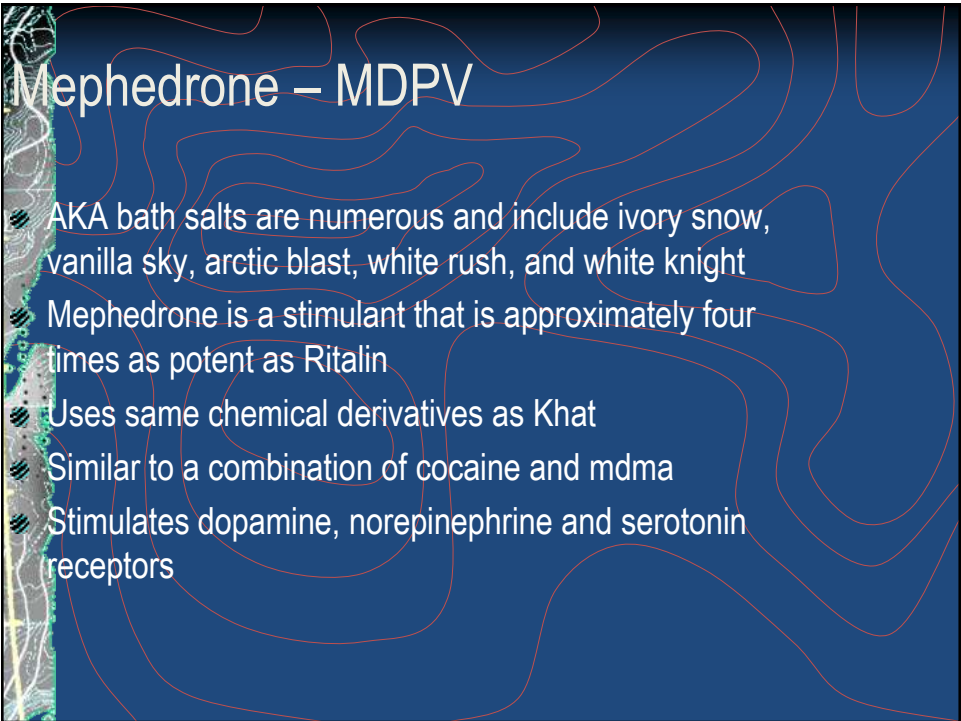
Salvia Smoking

- Salvia is smoked out of the same apparatus's as marijuana;
- Water pipes
- Pipes
- Bubblers
- Hookah.... etc





Bath Salts



Mephedrone – MDPV

- AKA bath salts are numerous and include ivory snow, vanilla sky, arctic blast, white rush, and white knight
- Mephedrone is a stimulant that is approximately four times as potent as Ritalin
- Uses same chemical derivatives as Khat
- Similar to a combination of cocaine and mdma
- Stimulates dopamine, norepinephrine and serotonin receptors

Mephedrone – MDPV



Mephedrone – MDPV-Addiction and Compulsive Use

MDPV is known to be associated with compulsive use ("fiending") in a minority of reports

A rough comedown is frequently reported, occasionally leading to compulsion to redose.

Redosing can cause exacerbations of effects

Mephedrone – MDPV- How is it used?

- Orally
- Smoking
- Snorting
- Rectally
- Intravenously – greatest number of side effects

MDPV Duration Oral	
Total Duration	2.0 - 7.0 hrs
Onset	15 - 30 mins
Coming Up	30 - 60 mins
Plateau	30 - 180 mins
Coming Down	30 - 120 mins
After Effects	2 - 48 hours
Hangover / Day After	---

MDPV Duration Insufflated	
Total Duration	2.0 - 3.5 hrs
Onset	5 - 20 mins
Coming Up	15 - 30 mins
Plateau	30 - 120 mins
Coming Down	30 - 60 mins
After Effects	2 - 48 hours
Hangover / Day After	---

Mephedrone – Desired Effects

- Euphoria
- General stimulation
- Enhanced music appreciation
- Elevated mood
- Decreased hostility
- Improved mental function
- Mild sexual stimulation (reported in 60 percent of mephedrone users)

Overall these effects are similar to those seen in other stimulant drug use (MDMA amphetamines cocaine).

Mephedrone – Adverse Effects

- Numbness
- Lack of tactile sensitivity
- Loss of appetite
- Insomnia
- Increased mean body temperature ("mephedrone sweat")
- Decrease in mean body temperature
- **Bruxism**
- **Elevated heart rate and blood pressure**
- Chest pain
- Nausea and vomiting
- Painful joints
- Discoloration of extremities/joints
- Abdominal pain
- Painful nasal drip with presence of blood
- Light headedness and dizziness
- Tremors
- Convulsions
- Headaches
- Cravings
- Nightmares
- Loss of concentration and memory loss
- Anxiety
- Depression
- Hallucinations
- Paranoia
- Fatigue respiratory difficulties.

Mephedrone – Very Adverse Effects

There are reports particularly after intravenous use of more severe psychological and behavioral effects. These include:

- Delusional paracitosis leading to scratching and gauging of the skin particularly of the face neck and arms
- Parkinson-like twitching of limbs
- Paranoia
- Suicidal ideation
- Severe insomnia
- Autoimmune vasculitis

Mephedrone – Treatment

General supportive care is the main treatment measure for sympathomimetic toxicity. Assessment of the airway, breathing, and circulation immediately is recommended.

- Administration of benzodiazepines
- GI decontamination
- If hyperthermia is present, standard cooling measures should be initiated.

Prolonged critical care management often is required for the numerous complications that may occur with the severe overdose (e.g., hyperthermia, seizures, advanced respiratory distress syndrome [ARDS], renal failure, rhabdomyolysis, CNS dysfunction).

PCP

What is PCP?

- PCP (phencyclidine) was developed in the 1950s as an intravenous anesthetic, but its use for humans was discontinued because it caused patients to become agitated, delusional, and irrational. Today individuals abuse PCP because of the mind-altering, hallucinogenic effects it produces.

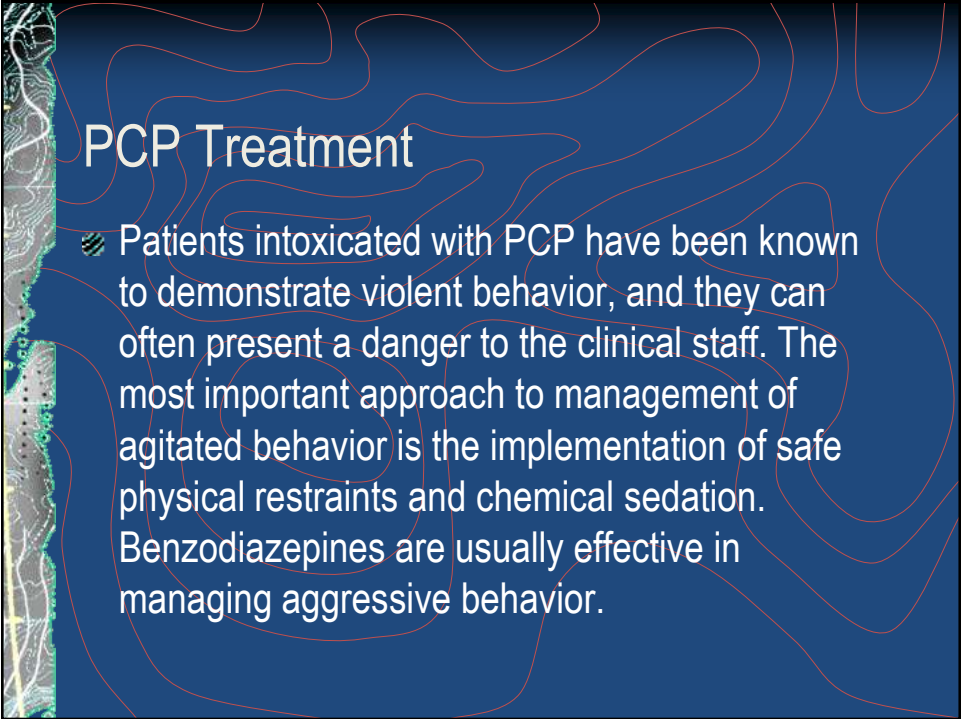


Hallmark Findings

- Incidences of hallmark findings in 1000 patients with PCP intoxication are as follows:
 - Nystagmus - 57.4%
 - Hypertension - 57%

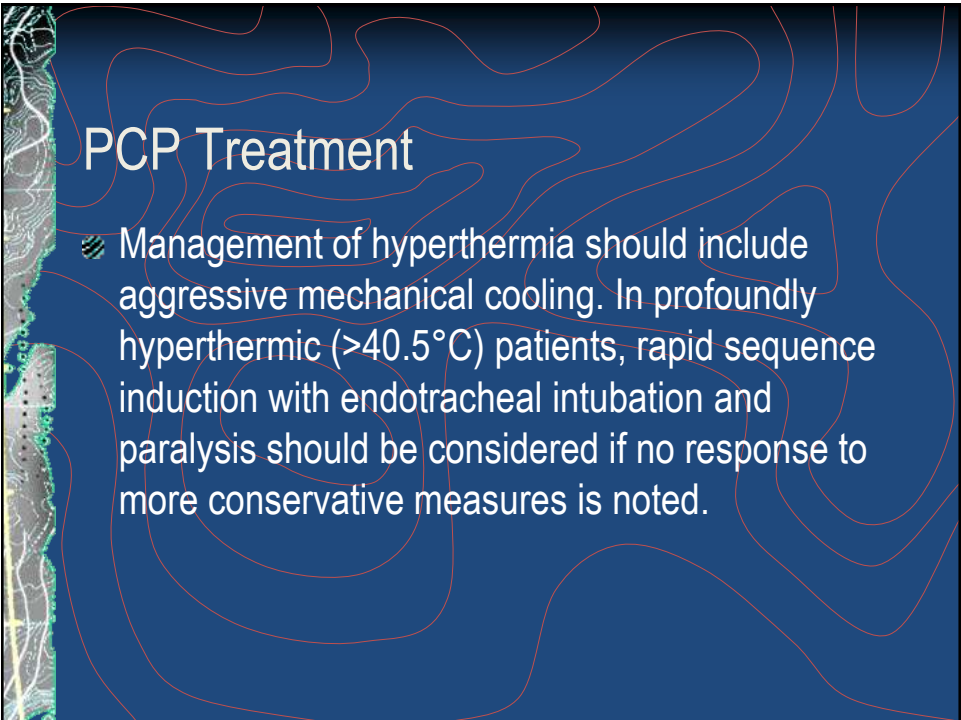
PCP Intoxication Behavioral Profile

- Incidences of behavioral findings in 1000 patients with PCP intoxication are as follows:
 - Violence - 35.4%
 - Agitation - 34%
 - Bizarreness - 28.8%
 - Hallucinations, delusions, or both - 18.5%
 - Muteness and stare - 11.7%
 - Nudism - 3.3%
 - None - 3.5%



PCP Treatment

- Patients intoxicated with PCP have been known to demonstrate violent behavior, and they can often present a danger to the clinical staff. The most important approach to management of agitated behavior is the implementation of safe physical restraints and chemical sedation. Benzodiazepines are usually effective in managing aggressive behavior.



PCP Treatment

- Management of hyperthermia should include aggressive mechanical cooling. In profoundly hyperthermic ($>40.5^{\circ}\text{C}$) patients, rapid sequence induction with endotracheal intubation and paralysis should be considered if no response to more conservative measures is noted.

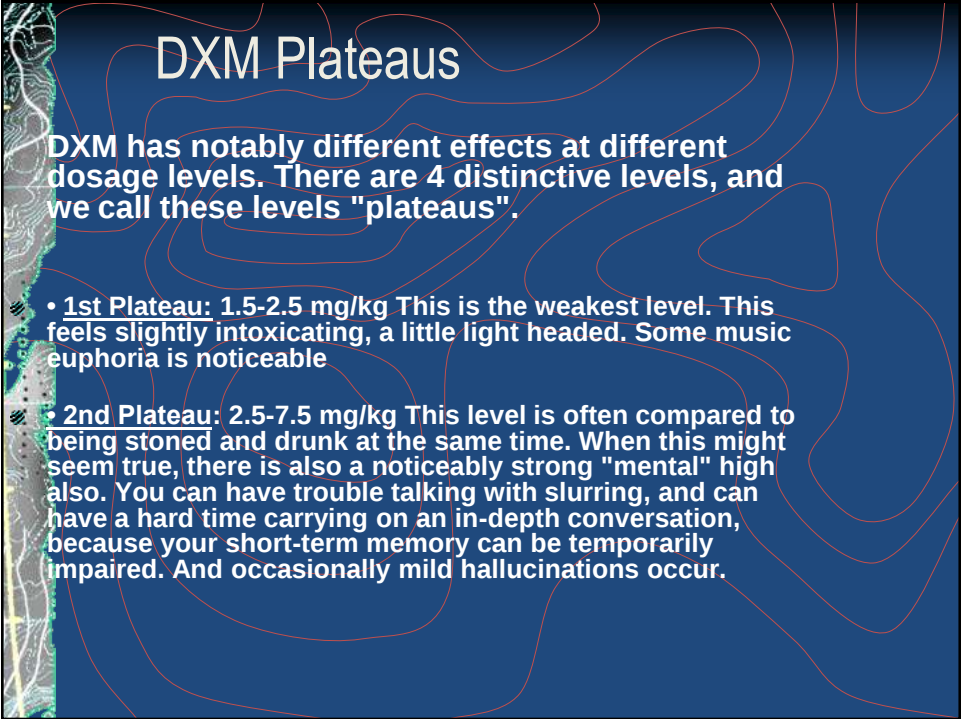
DXM- Introduction

- Yes, Its in cough Syrup
- Dextromethorphan acts as a cough suppressant via its agonist (activating) activity at mu-opioid receptors.
- In Canada: Contac CoughCaps (30 mg DXM)
- Related in effects to Ketamine and PCP

DXM- How is it used?



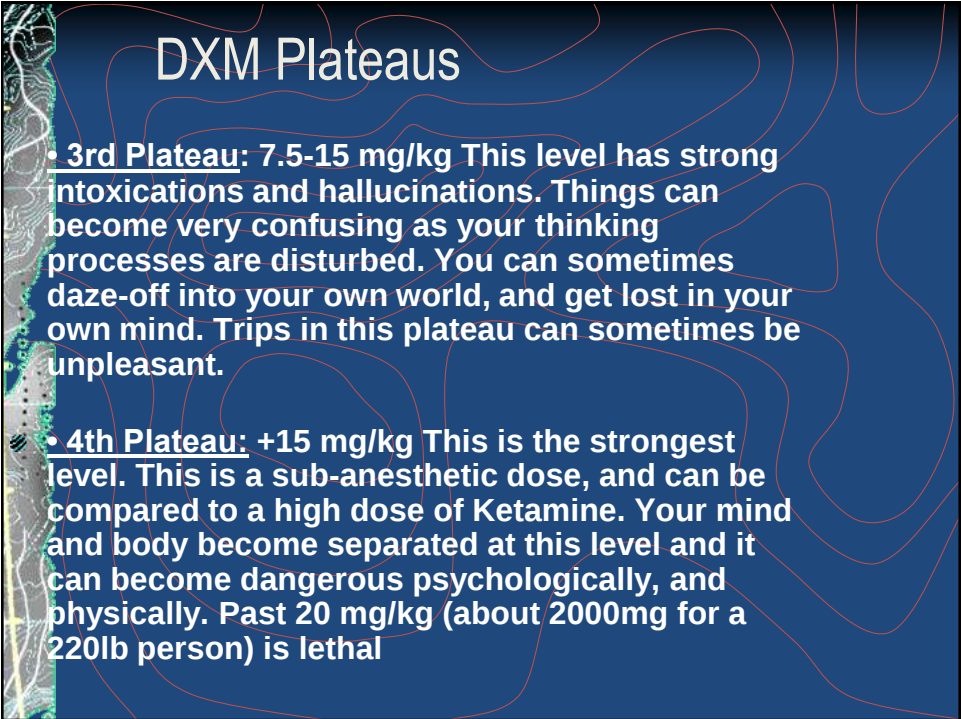
- “Robo-ing” (Old Term from early 90’s)
- DXM is available over-the-counter in tablet form in several countries as a cough med. Robitussin Maximum Strength Cough (not Robitussin DM) syrup
- Users often refer to DXM in “plateaus”
- Dose of Robitussin Maximum Strength Cough syrup is two to five full “shots” using the shot glass that comes with the bottle.



DXM Plateaus

DXM has notably different effects at different dosage levels. There are 4 distinctive levels, and we call these levels "plateaus".

- 1st Plateau: 1.5-2.5 mg/kg This is the weakest level. This feels slightly intoxicating, a little light headed. Some music euphoria is noticeable
- 2nd Plateau: 2.5-7.5 mg/kg This level is often compared to being stoned and drunk at the same time. When this might seem true, there is also a noticeably strong "mental" high also. You can have trouble talking with slurring, and can have a hard time carrying on an in-depth conversation, because your short-term memory can be temporarily impaired. And occasionally mild hallucinations occur.



DXM Plateaus

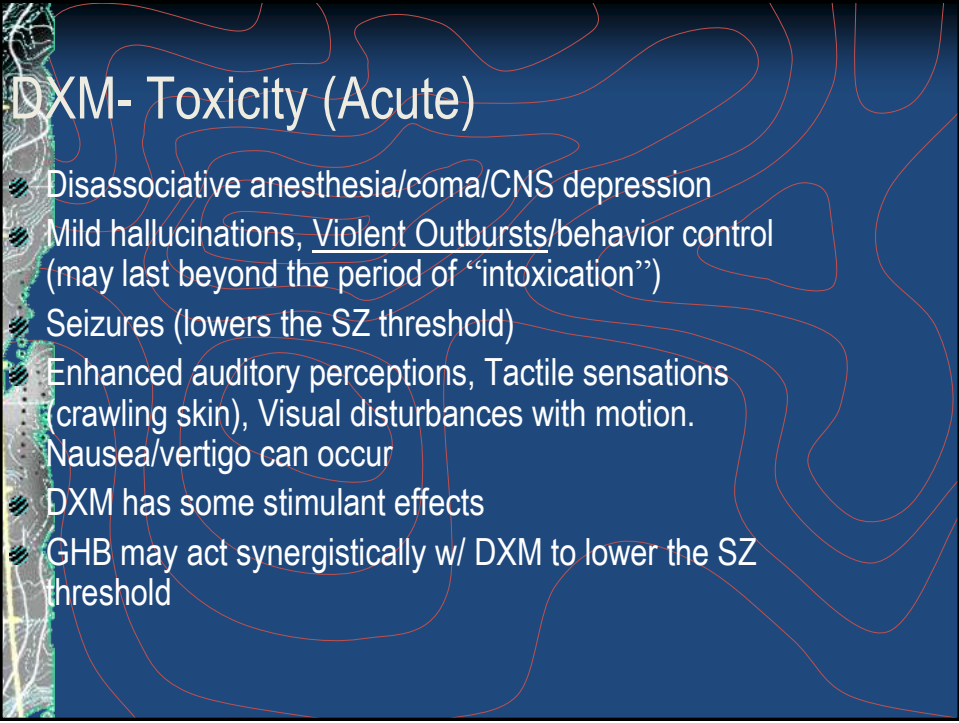
- 3rd Plateau: 7.5-15 mg/kg This level has strong intoxications and hallucinations. Things can become very confusing as your thinking processes are disturbed. You can sometimes daze-off into your own world, and get lost in your own mind. Trips in this plateau can sometimes be unpleasant.
- 4th Plateau: +15 mg/kg This is the strongest level. This is a sub-anesthetic dose, and can be compared to a high dose of Ketamine. Your mind and body become separated at this level and it can become dangerous psychologically, and physically. Past 20 mg/kg (about 2000mg for a 220lb person) is lethal

DXM- How does it work?

- DXM is in the same class as ketamine, PCP, MK-801, and several other NMDA open channel blockers
- Dose ranges from 100-900 mg. Fatal may be in excess of 1500 mg, but may be lowered by other drugs.
- Duration is about 2-4 hours, but some effects may linger for weeks
- It is classified (generally) as a Disassociative Anesthetic
- Some times “educated” users take a barbiturate or benzodiazepine to prevent brain damage while taking this drug (Olney's Lesions)

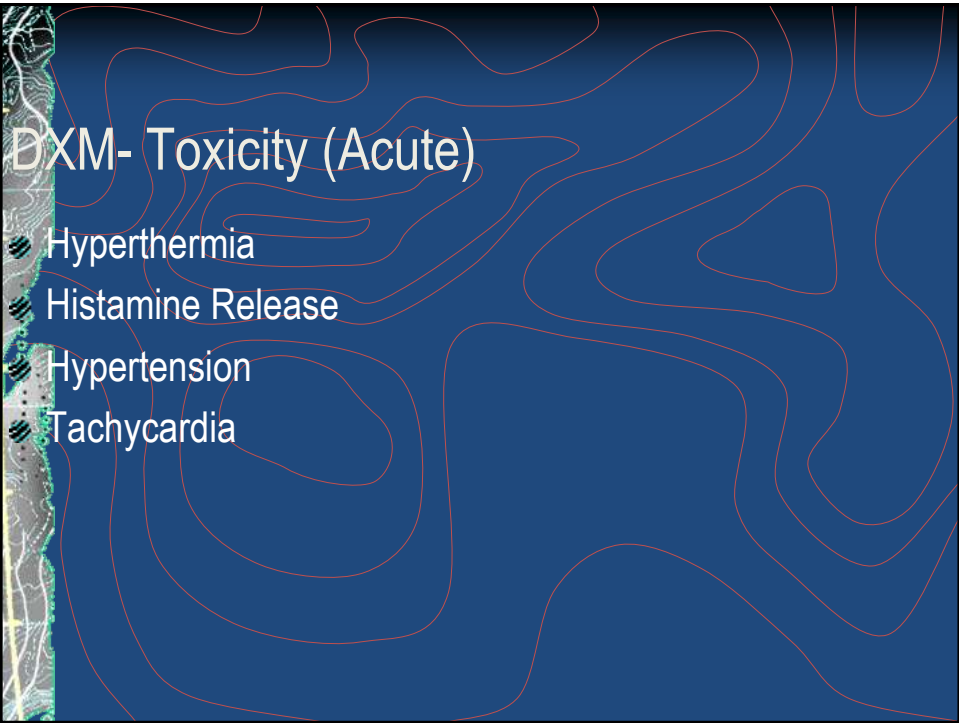
DXM- How does it work

- In simple terms, they knock you out by putting you 'out of your body'
- Effects at low dosage can be similar to alcohol producing carefree clumsiness with a touch of psychedelic and speedy effect. Intense and rhythmic music induces a state of euphoria and dancing becomes fun. (thus its rave use)
- On a higher dose imagination can become vividly experienced (not always pleasant), feelings of dissociation from the body can occur and on very high doses profound alterations in consciousness, violent outburst, SZ.



DXM- Toxicity (Acute)

- ◆ Disassociative anesthesia/coma/CNS depression
- ◆ Mild hallucinations, Violent Outbursts/behavior control (may last beyond the period of “intoxication”)
- ◆ Seizures (lowers the SZ threshold)
- ◆ Enhanced auditory perceptions, Tactile sensations (crawling skin), Visual disturbances with motion. Nausea/vertigo can occur
- ◆ DXM has some stimulant effects
- ◆ GHB may act synergistically w/ DXM to lower the SZ threshold



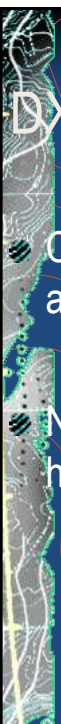
DXM- Toxicity (Acute)

- ◆ Hyperthermia
- ◆ Histamine Release
- ◆ Hypertension
- ◆ Tachycardia



DXM- Toxicity (Long Term)

- Olney's Lesions: vacuoles (essentially, tiny holes) in their brains. Specifically, the vacuoles showed up in the posterior cingulate cortex and retrosplenial cortex
- People who have used dissociatives heavily have shown clear evidence of brain damage ranging from impaired memory to a schizophrenia-like syndrome.
- Many of the impairments correspond *exactly* to the areas of the brain damaged in lab animals.



DXM- Coricidin Toxicity

- Coricidin Cough and Cold Caps, 30 mg DXM and 4 mgs of Chlorpheneramine maleate ‘
- Non Specific reports of “Respiratory Failure” at high doses.

DXM- Treatment

- VOMIT
- Symptomatic TX.
- Be alert for and (Cautiously) treat hypertension or hypotension, and rarely, cardiovascular problems
- Restraints (?)
- Avoid Chemical Restraint (Haldol, Droperidol), and use Benzodiazepines with caution (Be prepared to manage the airway)
- Benadryl may be given for dystonic reactions, and for s/s of histamine release.

DXM- What does this mean to me?

- Be Careful, take the same precautions you would with a PCP patient.
- ALS eval is a must (HTN, Hyperthermia, Respiratory Depression, and self harm)
- **DXM differs from other drugs. Its presentation of s/s extend well beyond simple CNS depression and hallucinations but into basic cognitive functions as well.**
- Understanding that DXM effects last well beyond the 4 hours of intoxication , and that **side effects may include “Psychotic Breaks”** will help determine disposition of patients.

MDMA or Ecstasy



EDC 2009 USC coliseum

MDMA (Ecstasy)-Introduction

- **methylenedioxy-n-methylamphetamine**
- MDMA is *chemically* an amphetamine, but psychologically it's what's known as an empathogen-entactogen
- Shares similarities to both mescaline (a hallucinogen) and amphetamines (A type of Stimulant)



MDMA (Ecstasy)- How is it used?

- Taken in tabs
- Effects generally appear within 15-30 minutes.
- Initial effects include a brief "rush" of energy, usually described as mild but euphoric.
- After this rush, the high levels off to a plateau which lasts 2-3 hours and is followed by a gradual "coming down" sensation, culminating in a feeling of fatigue. In about 4-6 hours
- MDMA exerts amphetamine-like effects
- These side effects are dose dependent.

MDMA (Ecstasy) How does it work?

- It MDMA blocks the reuptake of serotonin (5-HT), Unlike those drugs MDMA appears to enter the neuron, and causes the release of 5-HT as well.
- Thus MDMA is primarily a seritonerpic
- MDMA acts on 5-HT similarly to the way amphetamines act on dopamine.
- MDMA also agonist effects on 5HT2 muscarinic M1, alpha-2 adrenergic and histamine H1 receptors (Thus its stimulant effects)
- MDMA also causes some release of dopamine

MDMA

- MDMA exerts a strong paradoxical effect of relaxation which may mask the stimulant side effects, followed by a gradual drop.
- Generally, the side effects of MDMA are similar to those of amphetamine.
- MDMA also appears to exert an adverse action on the immunological response of some individuals, particularly with heavy use.

MDMA (Ecstasy) Toxicity

- MDMA is most often ingested orally, although inhalation and injection have been infrequently reported.
- The usual dose ranges from 100 to 150 mg. Toxicity may be seen at doses as little as 175 mg
- Ecstasy tablets are notoriously impure, often containing chemicals other than MDMA (such as PMA, PCP, or DXM)
- The Problem is that multiple drug combinations (especially stimulants) may lower the toxic threshold.
- MAO Inhibitors may lethally potentate this drug.

MDMA (Ecstasy) Toxicity

Mild s/s

- Jaw clenching (Lower Jaw)/teeth grinding, and scratching (think Tweakers)
- Nystagmus, Dilated Pupils
- Tremors
- Tachycardia, increased B/P
- Sensation of chills (secondary to elevated temp)
- Auditory Hallucinations (non specific)/sensitivity
- Orthostatic s/s, syncope secondary to dehydration

MDMA (Ecstasy) Toxicity

Major S/S

- Severe Dehydration with Hyponatremia
- Malignant Hyperthermia (Think Heat Stroke, but worse)
- Disseminated Intravascular Coagulation (DIC) (may have rapid onset)
- Decreased LOC/Coma
- Stroke S/S, Seizures
- Severe Tachycardia, HTN, CHF
- Kidney Failure

MDMA (Ecstasy) Toxicity Treatment

- Calm low stimulus environment
- VOMIT, Fluid Resuscitation as needed
- Benzodiazepines
- Droperidol 2.5-5mg for sedation/chemical restraint IM/IV
- Haldol 5 mg IM/IV
- Consider short acting Beta Blockers for severe HTN/Tachycardia (Brevibloc 500 mcg)
- Active cooling if indicated

MDMA (Ecstasy) What does this mean to me?

- Core Temp if unresponsive
- Fluid Resuscitation
- Watch for DIC, SZ



09 Ecstasy (MDMA) Tablets
Image © 2008 Erowid.org

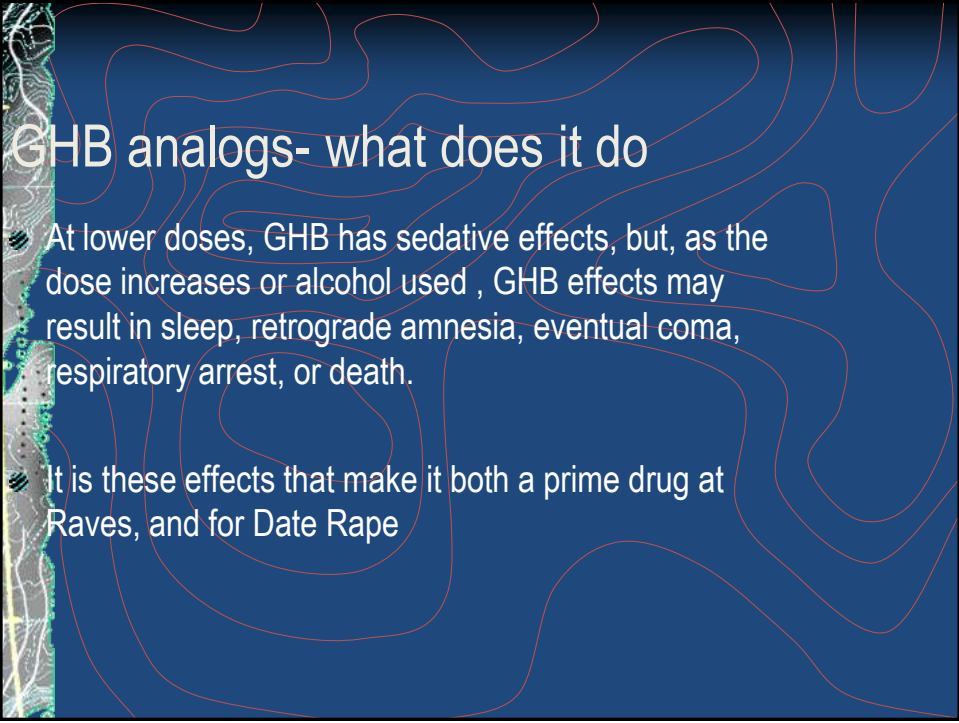
GHB Analogs- Introduction

- Gamma-hydroxybutyrate (GHB) may be made in homes by using recipes with common ingredients.
- "Liquid Ecstasy," "Georgia Home Boy," "Grievous Bodily Harm,"
- "Liquid ecstasy," do not confuse w/ MDMA
- GBL, GBH, One 4 B



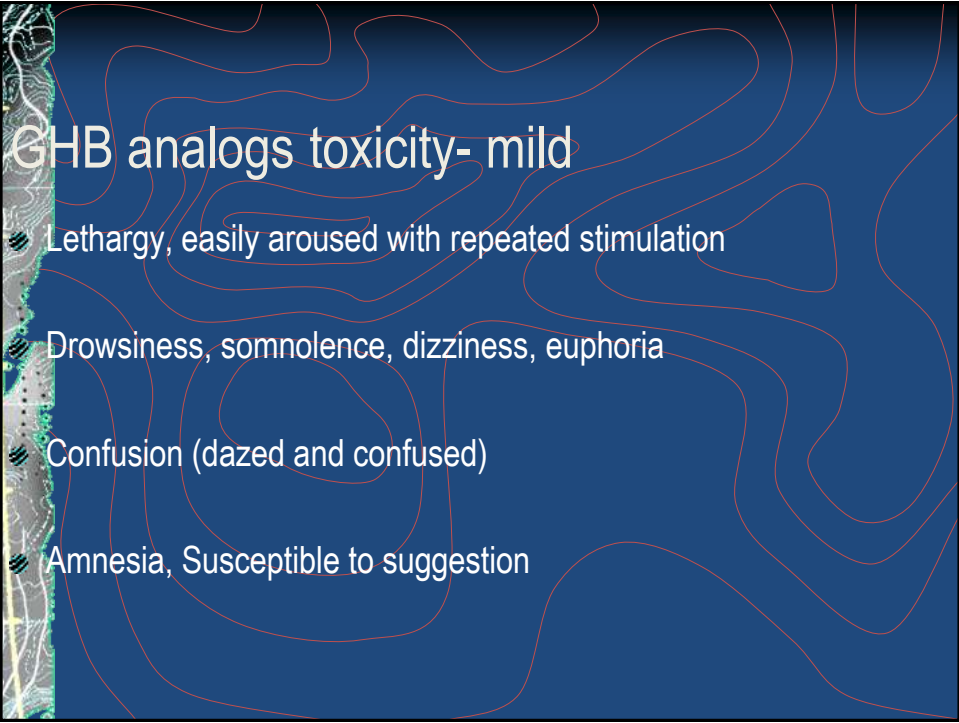
GHB analogs How is it used?

- GHB can be produced in clear liquid, or a white powder, tablet, and capsule forms, and it is often used in combination with alcohol, making it even more dangerous
- It is often carried in an eye dropper, or in water/Gatorade bottles and passed around.
- Typically measured out in capfuls.
- Occasionally blue food coloring is used to identify it at some raves.
- It is occasionally used as a body building aid



GHB analogs- what does it do

- At lower doses, GHB has sedative effects, but, as the dose increases or alcohol used, GHB effects may result in sleep, retrograde amnesia, eventual coma, respiratory arrest, or death.
- It is these effects that make it both a prime drug at Raves, and for Date Rape



GHB analogs toxicity- mild

- Lethargy, easily aroused with repeated stimulation
- Drowsiness, somnolence, dizziness, euphoria
- Confusion (dazed and confused)
- Amnesia, Susceptible to suggestion

GHB analogs Toxicity- Severe

- 66% with GCS <9, 1/2 of these may have GCS at 3!
- Frequent vomiting
- Bradycardia
- Respiratory depression or arrest
- Seizures
- Sudden onset of coma . patients often demonstrate extreme SUDDEN combativeness and agitation despite such profound CNS and respiratory depression
- Death (usually secondary to respiratory failure or aspiration)

GHB analogs Toxicity

- It is worth noting that alcohol severely exacerbates GHB's effects.

GHB analogs-Treatment

- Primary Supportive
- Beware of positional Asphyxia, But soft restraints are a good Idea
- Due to the risk of sudden airway failure, aspiration, and respiratory collapse, these patients need aggressive airway monitoring by ALS providers

GHB analogs-Treatment

- Protect your self
- VOMIT
- Be cautious using respiratory depressants
- Making the decision to tube/not tube is tough, these patients do frequently vomit.
- ETT placement is uncommon, but post ETT sedation/paralysis and restraint should be mandatory in the field

GHB analogs- What does this mean to me?

- GHB analogs are unpredictable in clinical course, other than duration.
- GHB analogs cause a rapid change in mental and respiratory status that makes it difficult to plan treatment and care
- GHB's presentation often mimics ETOH abuse and is often co-ingested.

LSD



LSD

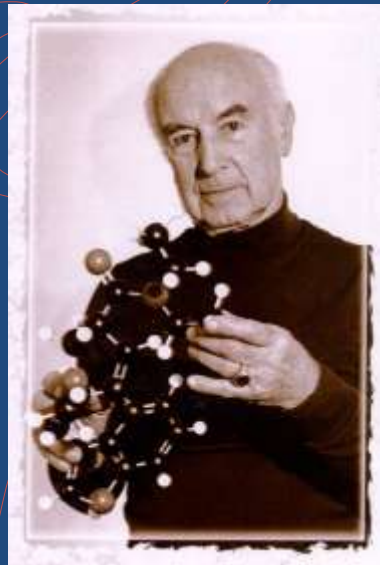
- Chemical Name- D-lysergic acid diethylamide-25
- Street Names- LSD, acid, Sydney, cid, micro, micro-dot, window-pane, Vitamin-A, blotter, hits, tabs, sugar, sunshine, dose-a, barrels, heavenly blue, trip, trip-ticket, wedding-bells, liquid-a, etc.

Albert Hoffman : Discoverer of LSD

Discovered LSD in 1938

Took first trip in 1943

Later synthesized psilocybin



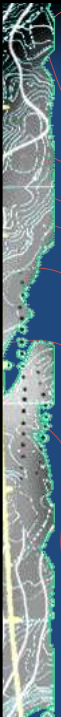


LSD

- LSD is a semi-synthetic psychedelic drug derived from the ergot fungus which grows on some plants, primarily rye.

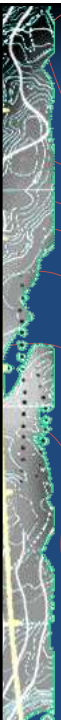
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LSD BLOTTER



LSD

- LSD manufacturers only need to create a small quantity of the substance, and thus they enjoy an ease of transport and concealment not available to traffickers of other illegal drugs (such as cannabis and cocaine).
- Manufacturing LSD requires laboratory equipment and experience in the field of organic chemistry.



LSD

- LSD is, by weight, one of the most potent drugs yet discovered. Both subjective reports and pharmacological methods such as receptor binding assays determine LSD to be around 100 times more potent than psilocybin and around 4,000 times more potent than mescaline.

LSD

- Dosages of LSD are measured in micrograms (μg), or millionths of a gram. By comparison, dosages of almost all other drugs, both recreational and medical, are measured in milligrams (mg), or thousandths of a gram.

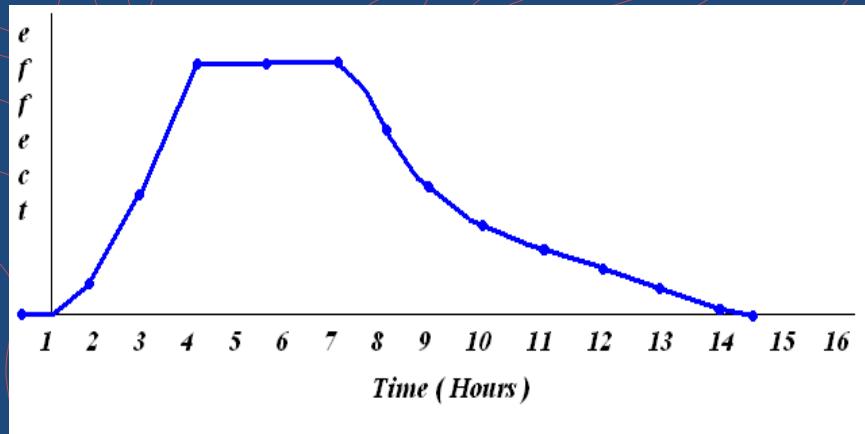
LSD

- LSD is supplied in “hits” or “tabs”. In pure form it is colorless, odorless, and mildly bitter. LSD is typically delivered orally, usually on a substrate such as absorbent blotter paper, a sugar cube, or gelatin.

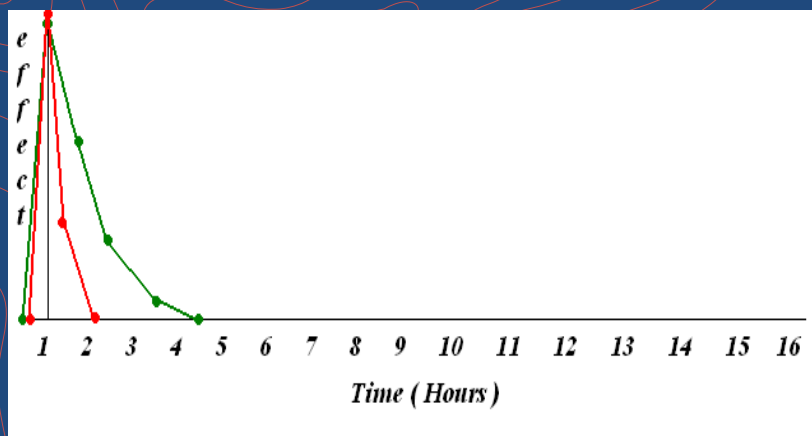
BLOTTERS



LSD



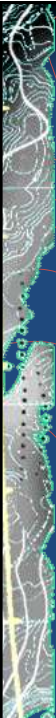
Marijuana and Cocaine





LSD

- In most doses aside from the mood altering effects, it produces illusions of geometric patterns, trails behind moving objects, and brilliant colors.
- At higher doses it can produce Synaesthesia.



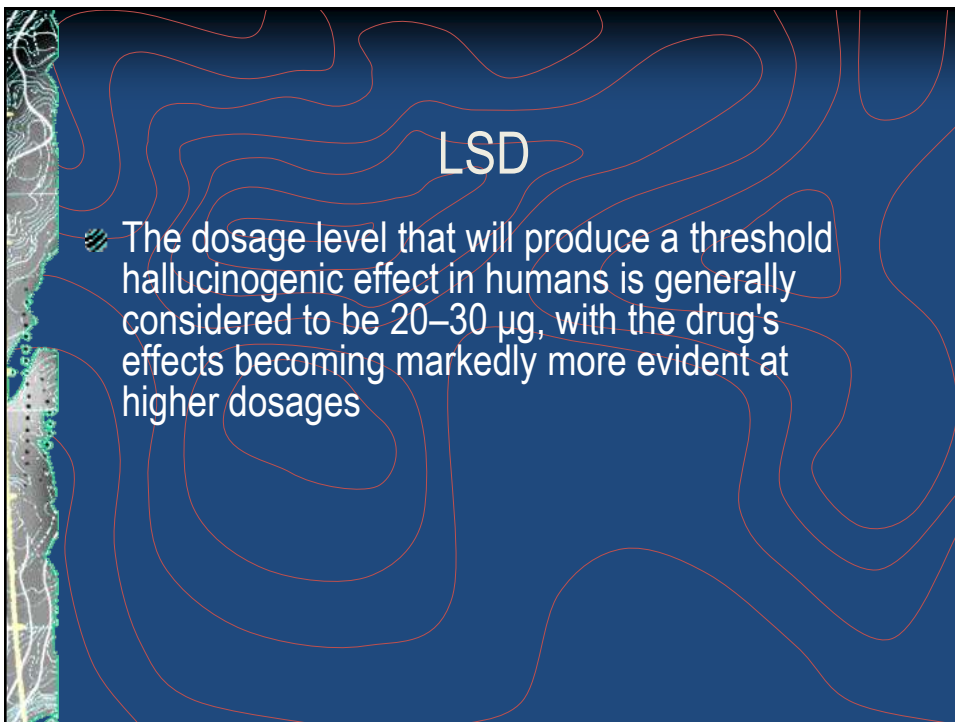
Synaesthesia

- Synaesthesia is the condition where one sensory modality gives rise to another sensory modality. This results in correspondence between shades of color, tones of sound, and intensity of taste.
- Synaesthesia for example might allow one user to see the color red when listening to a certain sound, or a smooth surface might evoke a sweet taste. Users usually describe this as “tasting colors”, or “hearing colors”, or “tasting sounds” etc.



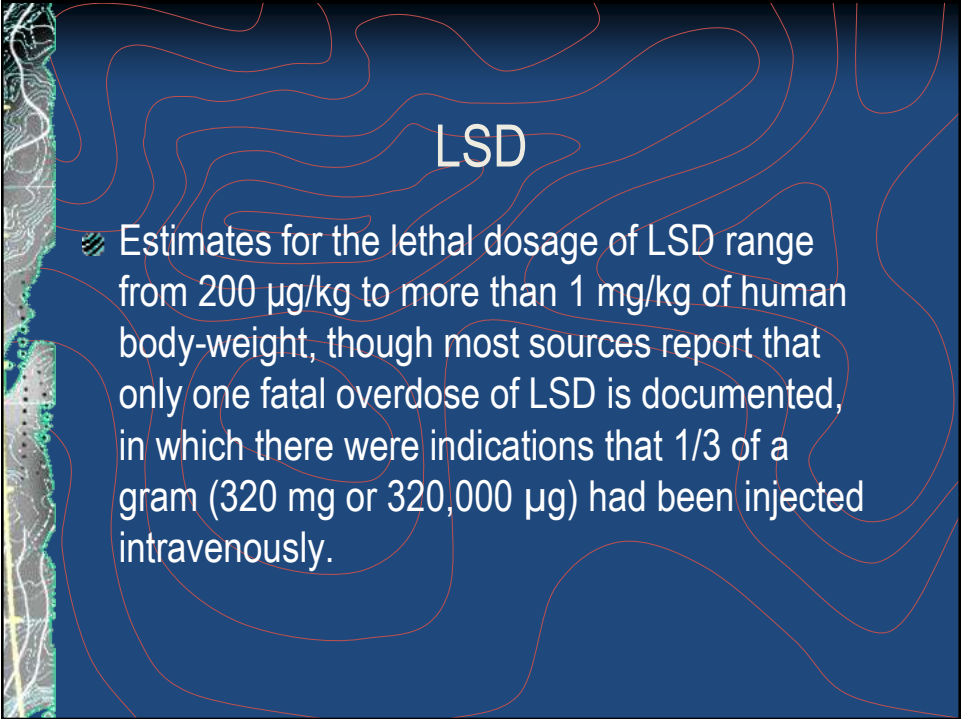
LSD

- Black market LSD remains generally unadulterated, although manufacturing by-products do appear. Lower doses generally mean fewer bad trips.



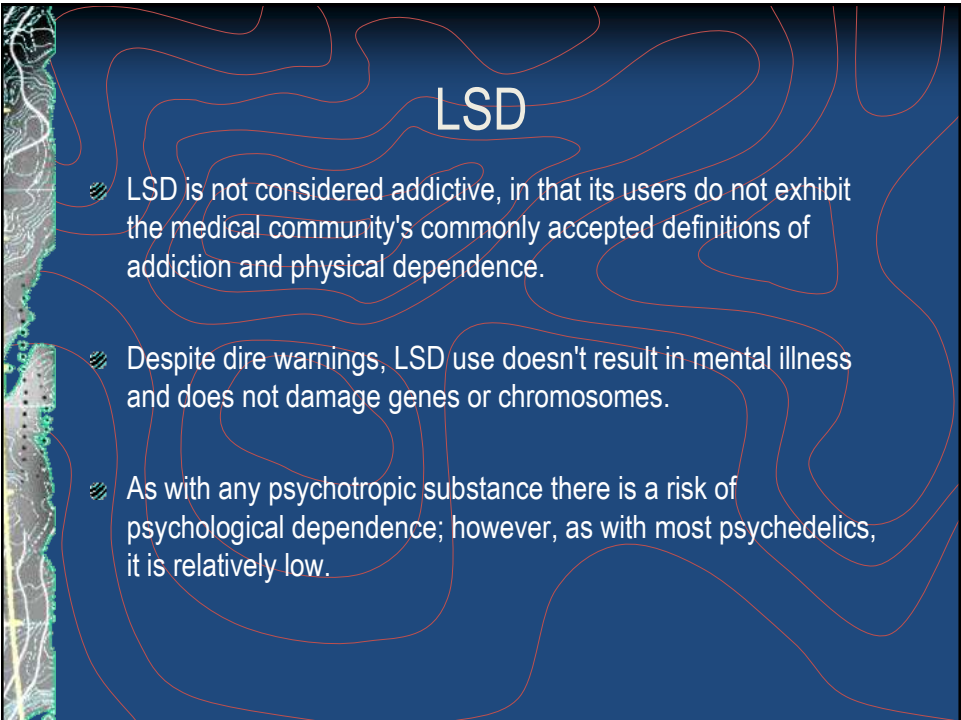
LSD

- The dosage level that will produce a threshold hallucinogenic effect in humans is generally considered to be 20–30 μg , with the drug's effects becoming markedly more evident at higher dosages



LSD

- Estimates for the lethal dosage of LSD range from 200 $\mu\text{g/kg}$ to more than 1 mg/kg of human body-weight, though most sources report that only one fatal overdose of LSD is documented, in which there were indications that 1/3 of a gram (320 mg or 320,000 μg) had been injected intravenously.



LSD

- LSD is not considered addictive, in that its users do not exhibit the medical community's commonly accepted definitions of addiction and physical dependence.
- Despite dire warnings, LSD use doesn't result in mental illness and does not damage genes or chromosomes.
- As with any psychotropic substance there is a risk of psychological dependence; however, as with most psychedelics, it is relatively low.

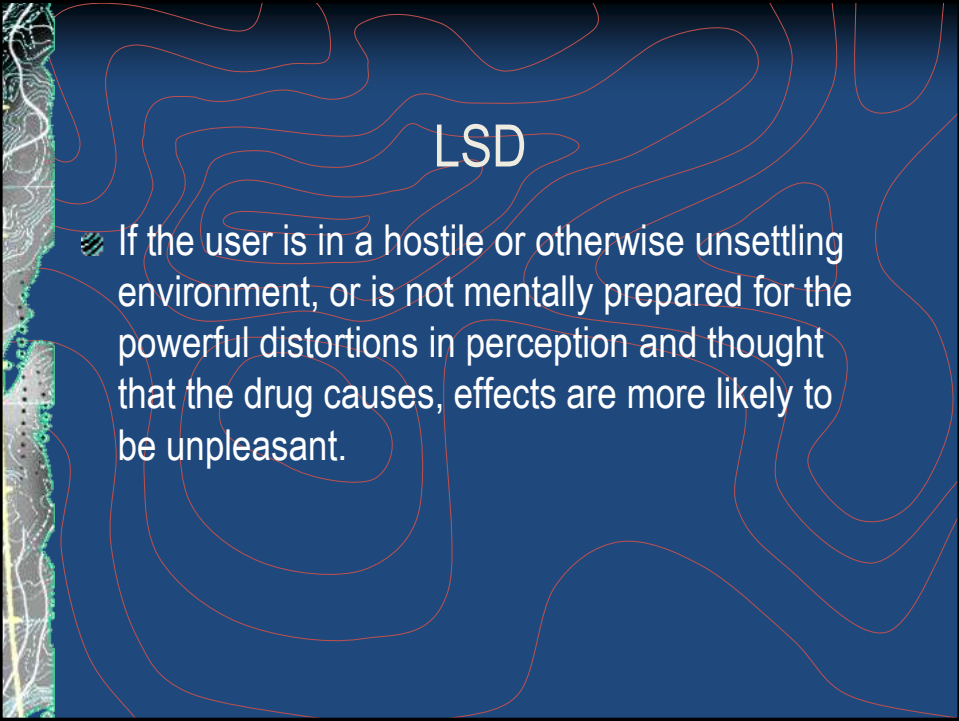
LSD Physical Effects

Physical reactions to LSD are **highly variable** and may include the following:

- | | |
|---------------------------------------|----------------------|
| Hypertension | Uterine contractions |
| Tachypnea | Hyperthermia |
| Jaw clenching | Erythema |
| Nausea/Vomiting | Hyperglycemia |
| Perspiration/Diaphoresis | Dry-mouth |
| Pupil-dilation | Goose bumps |
| Salivation | Tachycardia |
| Tremors | Mucus production |
| Cramps and muscle tension or soreness | Sleeplessness |
| are also fairly commonly reported | |

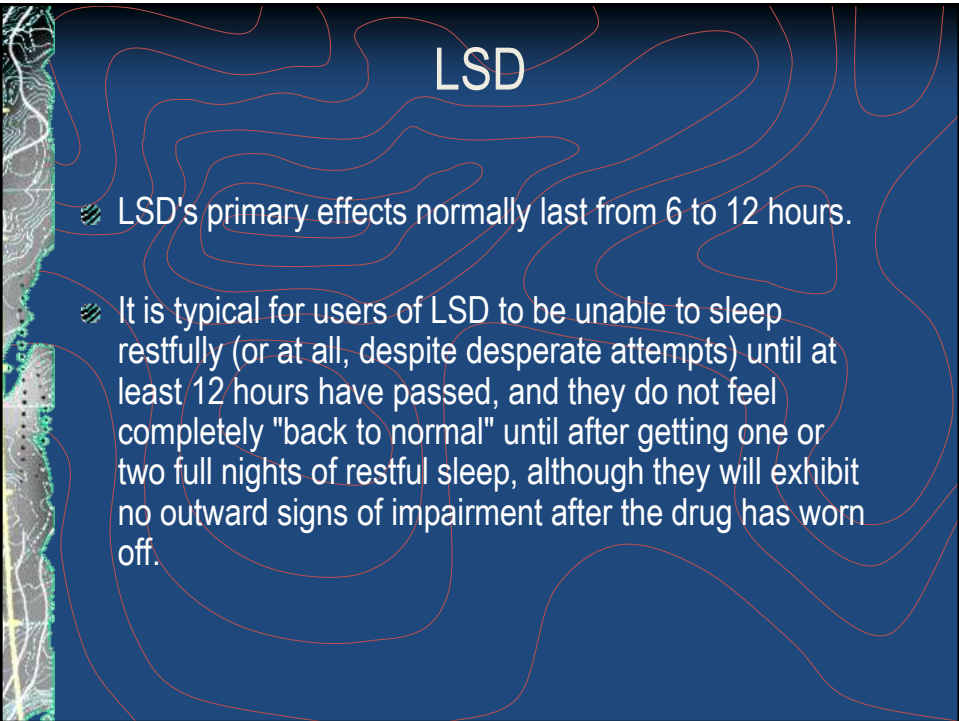
LSD

- LSD's psychological effects (commonly called a "trip") vary greatly from person to person, from one trip to another, and even as time passes during a single trip.
- Widely different effects emerge based on *set and setting* — the 'set' being the general mindset of the user, and the 'setting' being the physical and social environment in which the drug's effects are experienced.



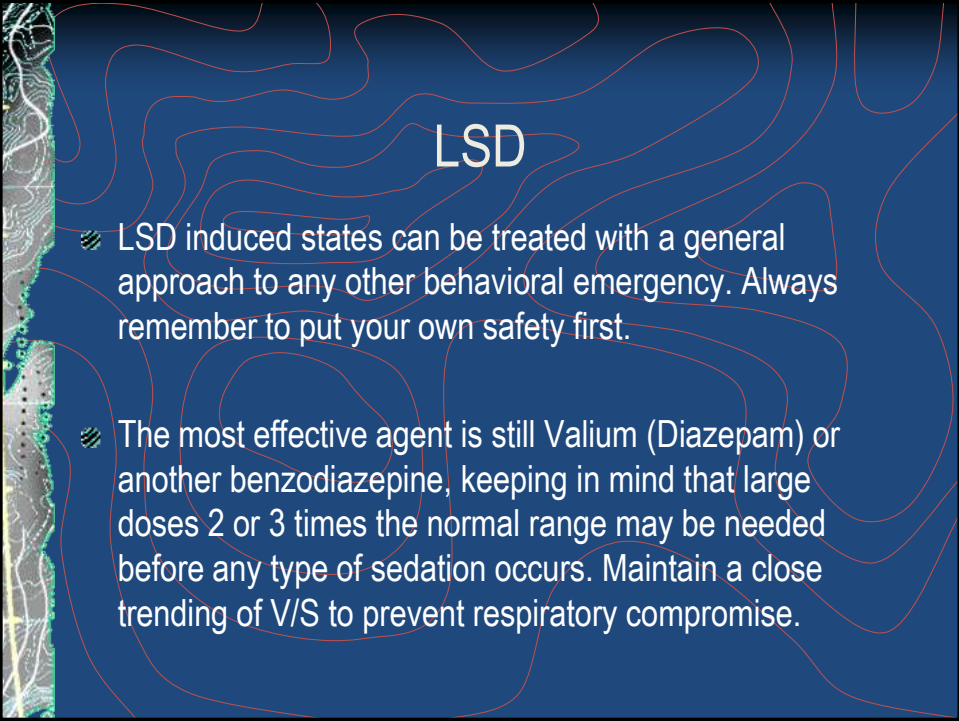
LSD

- If the user is in a hostile or otherwise unsettling environment, or is not mentally prepared for the powerful distortions in perception and thought that the drug causes, effects are more likely to be unpleasant.



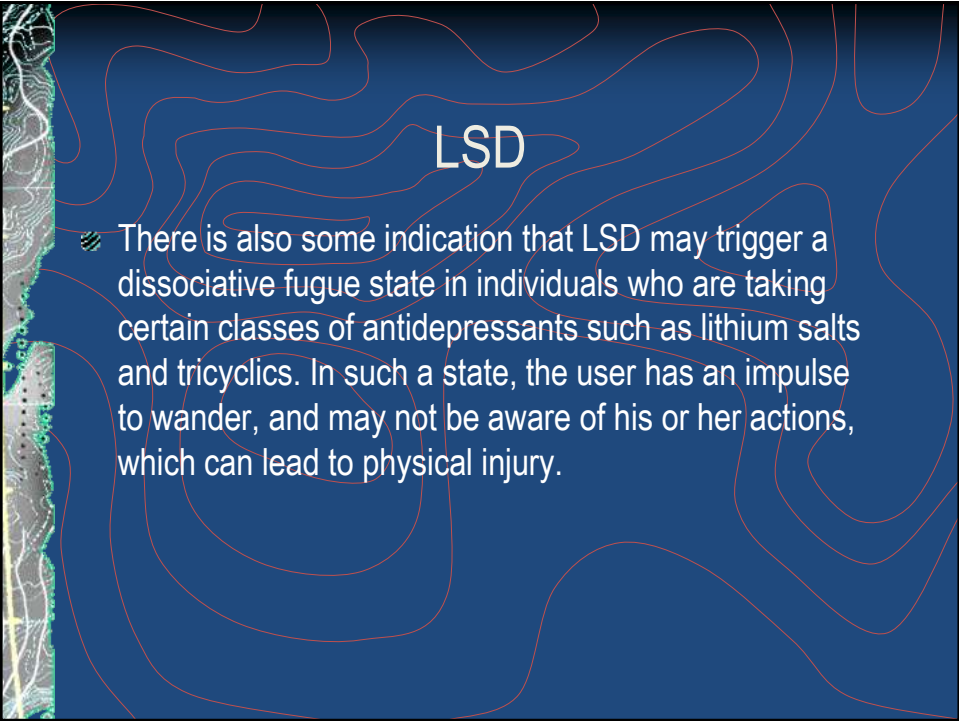
LSD

- LSD's primary effects normally last from 6 to 12 hours.
- It is typical for users of LSD to be unable to sleep restfully (or at all, despite desperate attempts) until at least 12 hours have passed, and they do not feel completely "back to normal" until after getting one or two full nights of restful sleep, although they will exhibit no outward signs of impairment after the drug has worn off.



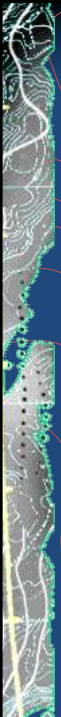
LSD

- LSD induced states can be treated with a general approach to any other behavioral emergency. Always remember to put your own safety first.
- The most effective agent is still Valium (Diazepam) or another benzodiazepine, keeping in mind that large doses 2 or 3 times the normal range may be needed before any type of sedation occurs. Maintain a close trending of V/S to prevent respiratory compromise.



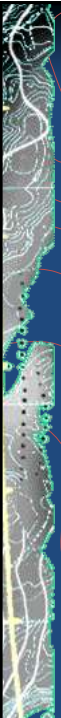
LSD

- There is also some indication that LSD may trigger a dissociative fugue state in individuals who are taking certain classes of antidepressants such as lithium salts and tricyclics. In such a state, the user has an impulse to wander, and may not be aware of his or her actions, which can lead to physical injury.



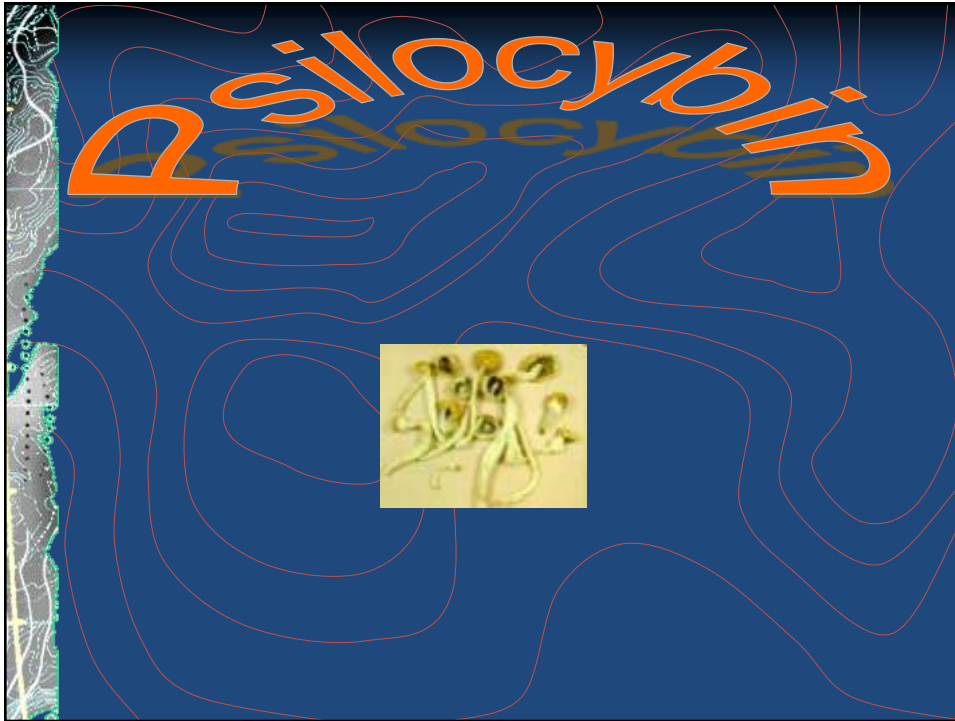
LSD

- There is also a rarely reported possibility of "flashbacks", a psychological phenomenon in which an individual experiences an episode of some of the subjective effects of LSD (this may be a positive or negative experience) long after the drug has been consumed and worn off — sometimes weeks, months or even years afterward.



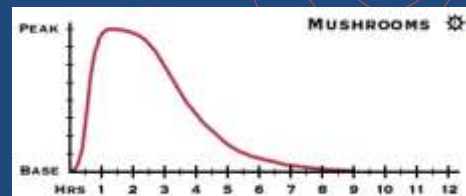
LSD

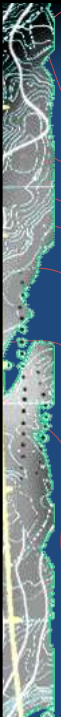
- In Summary-
- LSD is the most potent hallucinogen available on the street.
- It can induce schizophrenic-like states, where a person is a danger to themselves or others
- May complicate underlying health problems such as ACS or Anaphylaxis.



Mushrooms

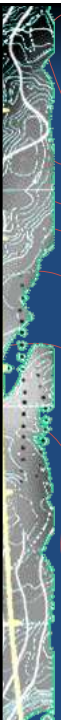
- The oldest representations of hallucinogenic mushrooms in the world are in The Sahara Desert. They were produced 7000-9000 years ago. The idea that the use of hallucinogens should be a source of inspiration for some forms of prehistoric rock art is not a new one.





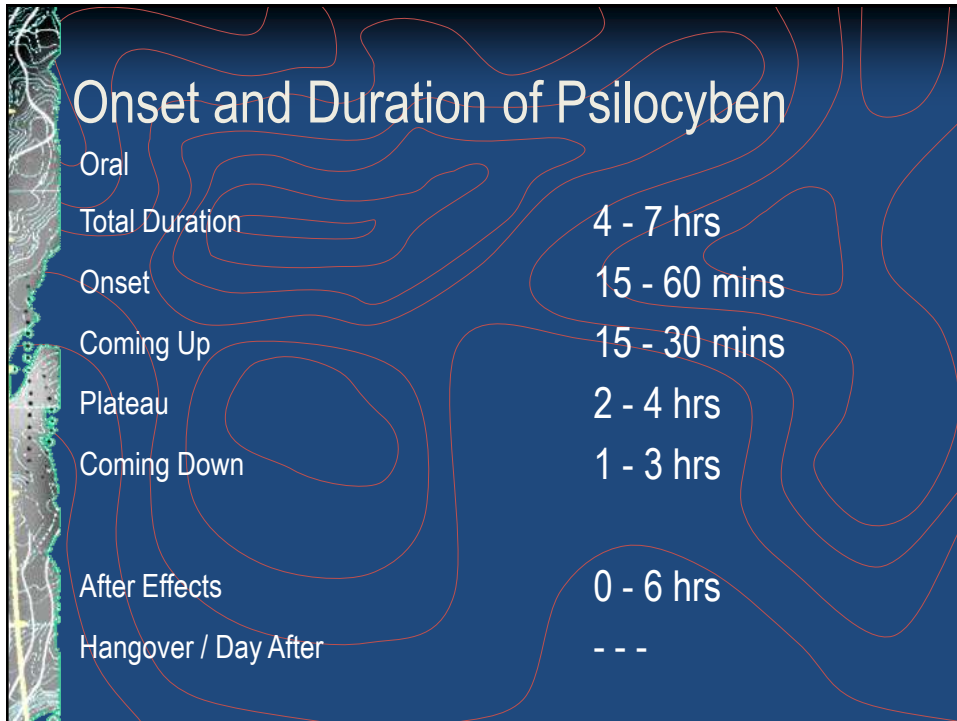
More facts

- Albert Hofmann, the father of LSD, was the first to extract psilocybin and psilocin from the magic mushroom. Relatively unstable, psilocybin is converted to psilocin by the body.
- The LSD-like-effects attributed to psilocybin are actually the work of psilocin. Known formally as ortho-phosphoryl-4-hydroxyN-di-methyltryptamine, psilocybin chemically resembles LSD and produces a similar but less intense trip



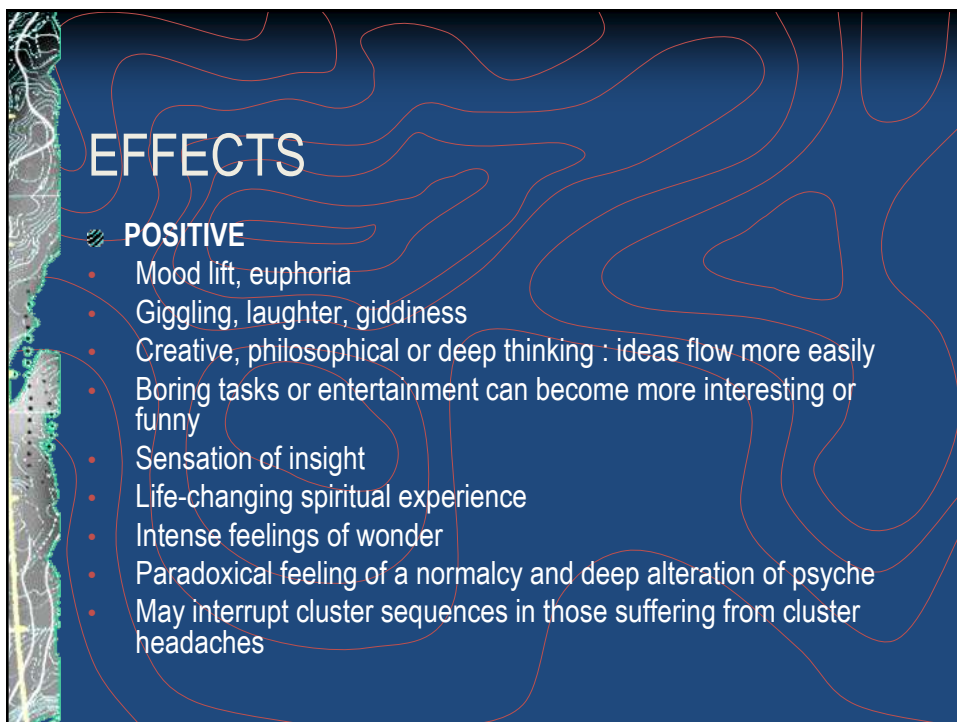
Facts continued

- While tolerance develops with psilocybin, there is no physical or psychological dependence, overdose potential, or possibility of addiction.
- Psilocybin has a cross-tolerance to LSD and mescaline, meaning the use of one will add to the cumulative tolerance of the other.



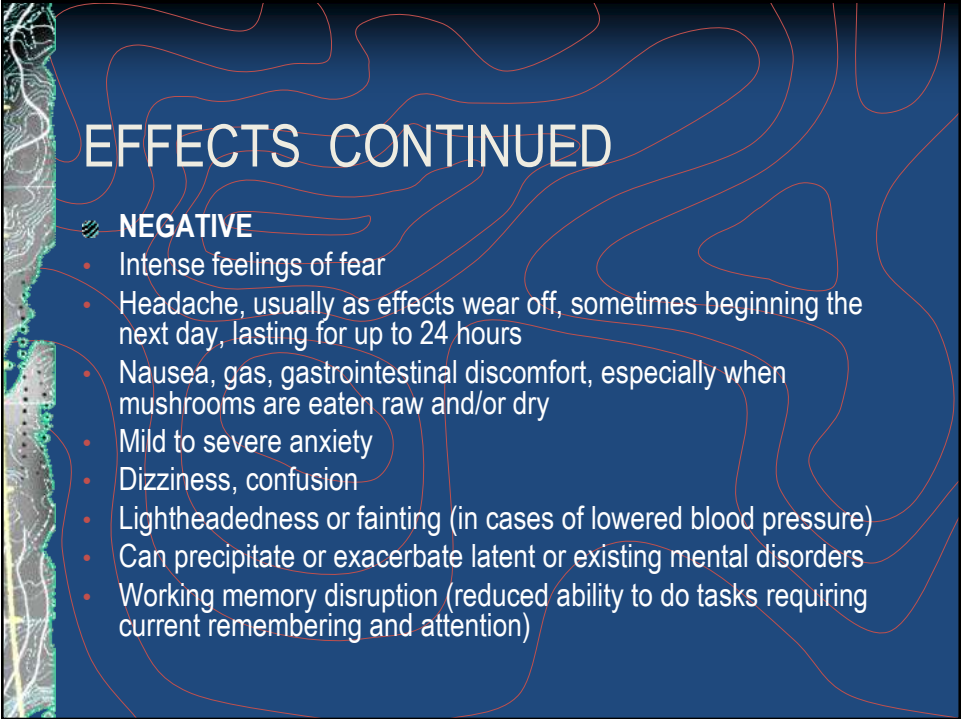
Onset and Duration of Psilocyben

Oral	
Total Duration	4 - 7 hrs
Onset	15 - 60 mins
Coming Up	15 - 30 mins
Plateau	2 - 4 hrs
Coming Down	1 - 3 hrs
After Effects	0 - 6 hrs
Hangover / Day After	- - -



EFFECTS

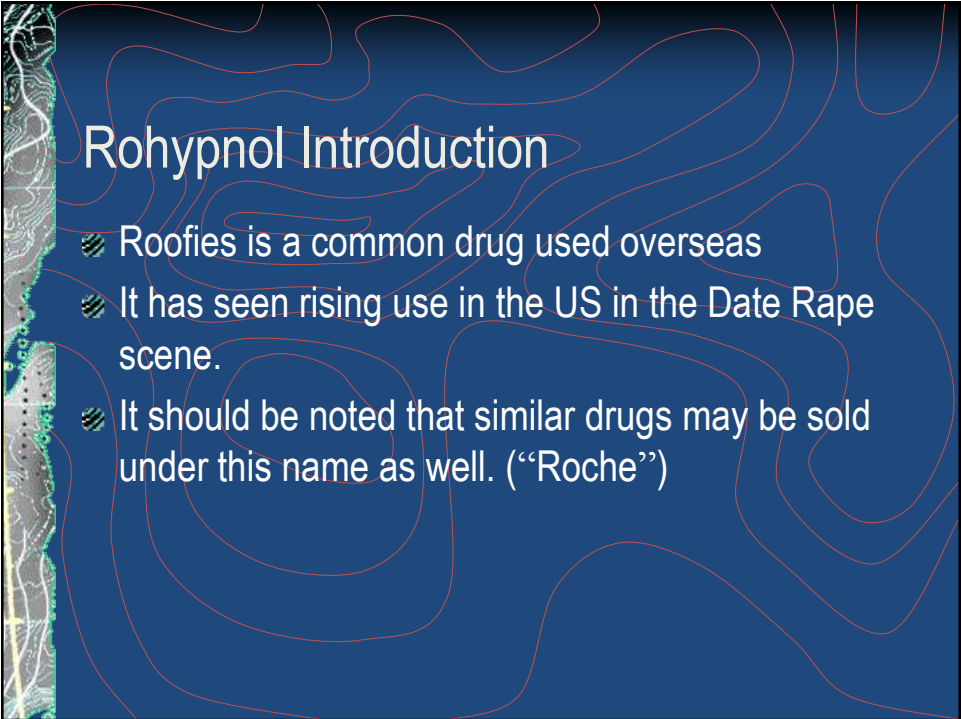
 POSITIVE	
• Mood lift, euphoria • Giggling, laughter, giddiness • Creative, philosophical or deep thinking : ideas flow more easily • Boring tasks or entertainment can become more interesting or funny • Sensation of insight • Life-changing spiritual experience • Intense feelings of wonder • Paradoxical feeling of a normalcy and deep alteration of psyche • May interrupt cluster sequences in those suffering from cluster headaches	



EFFECTS CONTINUED

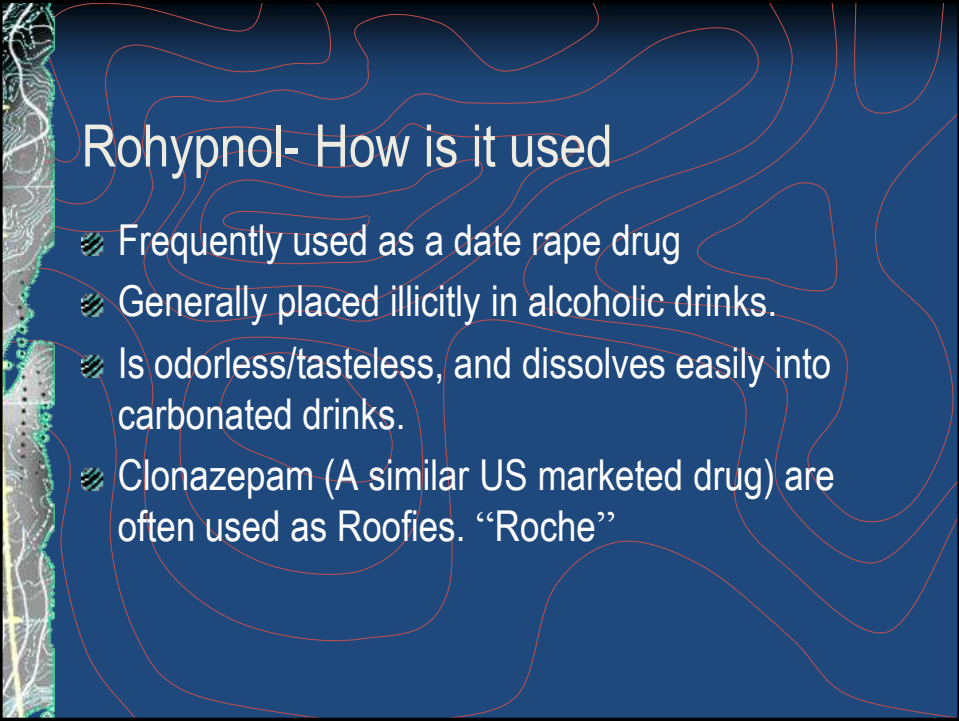
● NEGATIVE

- Intense feelings of fear
- Headache, usually as effects wear off, sometimes beginning the next day, lasting for up to 24 hours
- Nausea, gas, gastrointestinal discomfort, especially when mushrooms are eaten raw and/or dry
- Mild to severe anxiety
- Dizziness, confusion
- Lightheadedness or fainting (in cases of lowered blood pressure)
- Can precipitate or exacerbate latent or existing mental disorders
- Working memory disruption (reduced ability to do tasks requiring current remembering and attention)



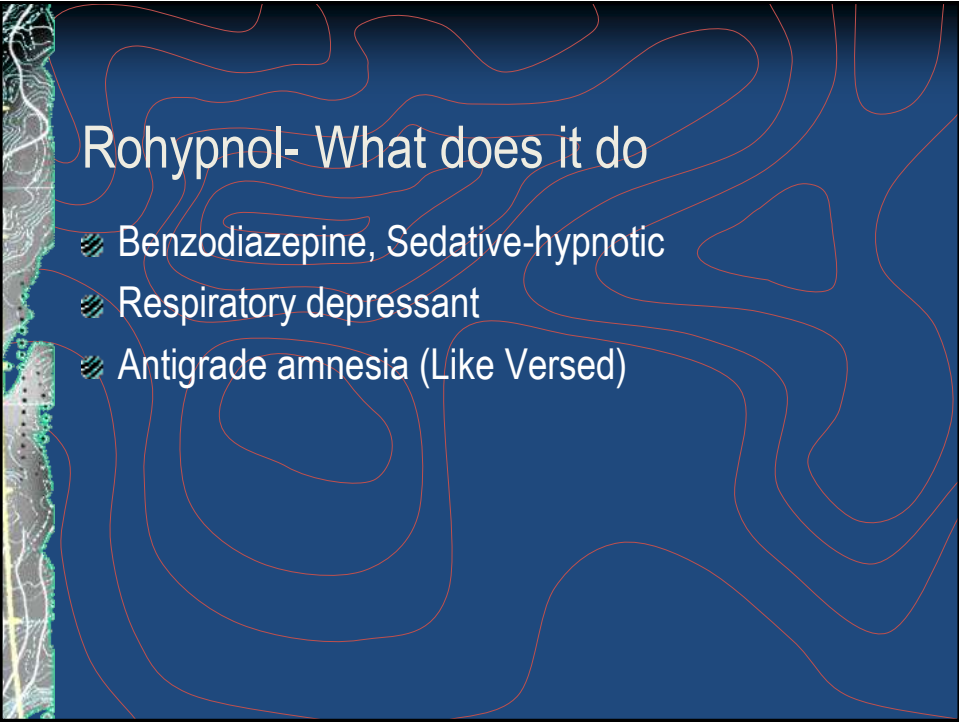
Rohypnol Introduction

- Roofies is a common drug used overseas
- It has seen rising use in the US in the Date Rape scene.
- It should be noted that similar drugs may be sold under this name as well. (“Roche”)



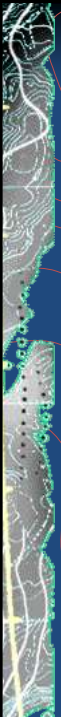
Rohypnol- How is it used

- Frequently used as a date rape drug
- Generally placed illicitly in alcoholic drinks.
- Is odorless/tasteless, and dissolves easily into carbonated drinks.
- Clonazepam (A similar US marketed drug) are often used as Roofies. “Roche”



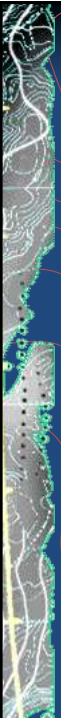
Rohypnol- What does it do

- Benzodiazepine, Sedative-hypnotic
- Respiratory depressant
- Antigrade amnesia (Like Versed)



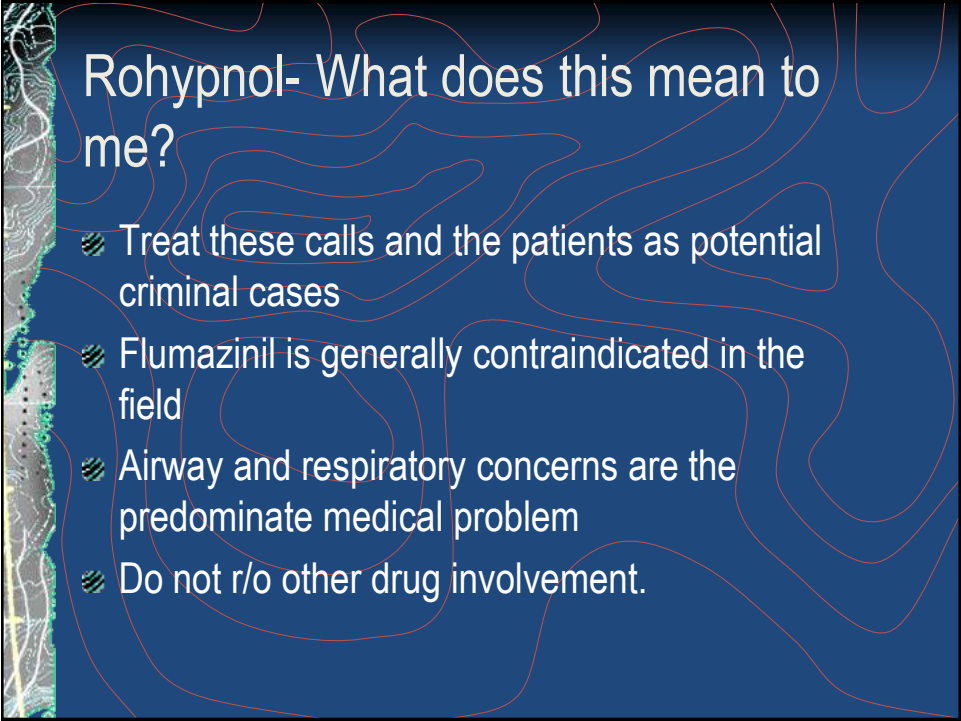
Rohypnol-Toxicity

- 1 MG of Rohypnol can impair the pt for up to 8 hours
- 3 mg of Clonazepam causes significant CNS depression and somnolence in 50% of adults on one study (with no other drug use) (Comes in .5, 1 and 3 mg tablets)
- like those produced by other CNS depressants, include somnolence, confusion, coma and diminished reflexes



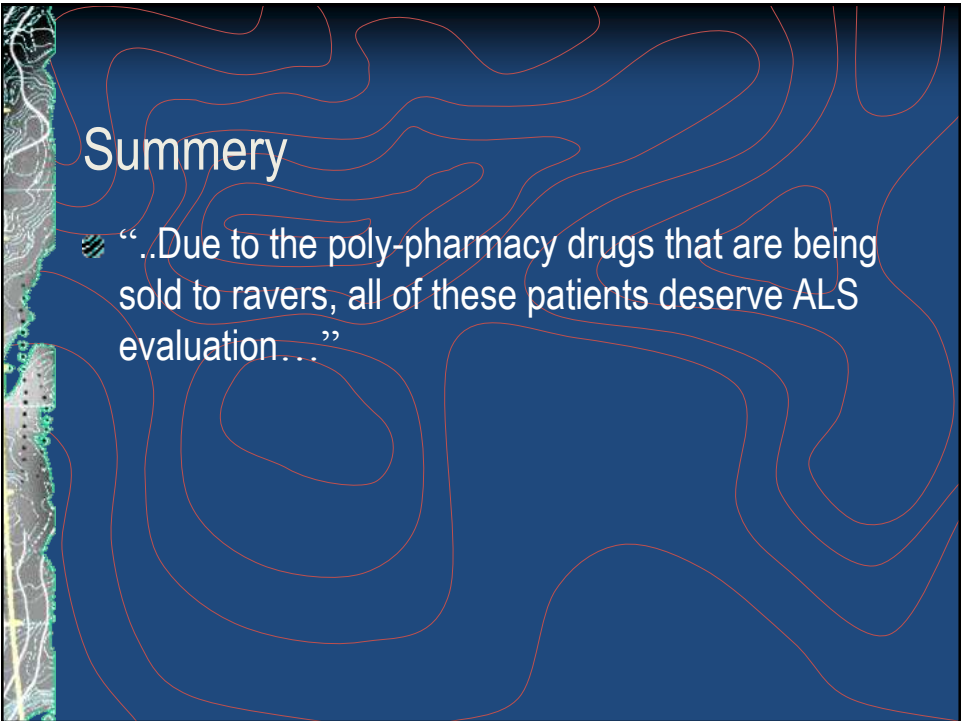
Rohypnol-Treatment

- **Flumazenil is not indicated in patients with epilepsy who have been treated with benzodiazepines. Antagonism of the benzodiazepine effect in such patients may provoke seizures.**
- **It is also contraindicated in poly-pharm cases.**
- Otherwise care is supportive and based on respiratory status.



Rohypnol- What does this mean to me?

- Treat these calls and the patients as potential criminal cases
- Flumaziniil is generally contraindicated in the field
- Airway and respiratory concerns are the predominate medical problem
- Do not r/o other drug involvement.

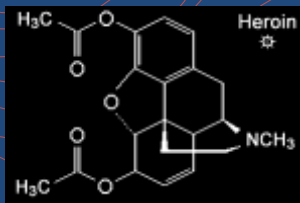


Summery

- “..Due to the poly-pharmacy drugs that are being sold to ravers, all of these patients deserve ALS evaluation...”

OPIATES

The Opiates



● We will focus on Heroin. There are others similar drugs in this class as well:

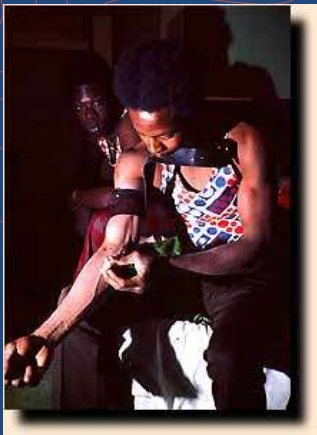
- Morphine
- Oxycontin
- Fentanyl
- Methadone

Background

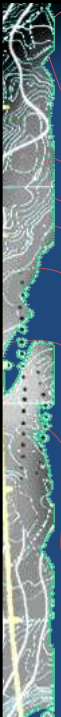


- Heroin - First synthesized from morphine (derived from the poppy plant) in 1874, was not extensively used in medicine until the beginning of this century.
- Commercial production of the new pain remedy was first started in 1898. While it received widespread acceptance from the medical profession, physicians remained unaware of its potential for addiction for years.
- It's abuse was a major cause of the Harrison Narcotic Act of 1914.

Background

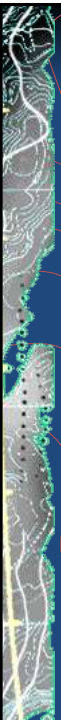


- One survey in 1999 saw 2% of HS students had used heroin, most (1.1%) under the age of 16.
- Use is mainly growing in the 30-40 age group (those w/ teenagers)
- There is some indication that heroin use is slowly increasing to levels seen in the 60's and 70's.



Background

- Pure heroin is a white powder with a bitter taste. Most illicit heroin is a powder form which may vary in color from white to dark brown because of impurities left from the manufacturing process or the presence of additives. Pure heroin is rarely sold on the street.. This heroin may be smoked.
- "black tar," has also become increasingly available in the western United States. It is often sold on the street in its tar-like state at purities ranging from twenty to eighty percent. This heroin is most frequently dissolved, diluted and injected.



Slang

- A "bag" --slang for a single dosage unit of heroin-- may contain 100 mg of powder, only a small portion of which is heroin. The remainder could be sugars, starch, powdered milk, or quinine. Traditionally the purity of heroin in a "bag" has ranged from one to ten percent.
- More recently, heroin purity has ranged from one to ninety-eight percent, with a national average of thirty-five percent.
- "Chippers" that being the term for non-addicts who use addictive drugs in a controlled fashion

Slang

- China White
- Red Rum
- Homicide, Polo, Super Buick (w/ Scopolamine or Coke)
- Dragon
- Black Tar
- Smack, Scag



Methods of use

- Low Purity: almost exclusively was injected either IV, SQ, or IM.
- Higher purity: snort or smoke the narcotic.
- Availability of high quality heroin is increasing.



Methods of use:



- Shooting
- Skin Popping:
- Muscle Popping:
- Chasing the dragon:
Smoking
- Freebasing
- Dirty Hit:

Methods of use: Oxycontin / MS Contin



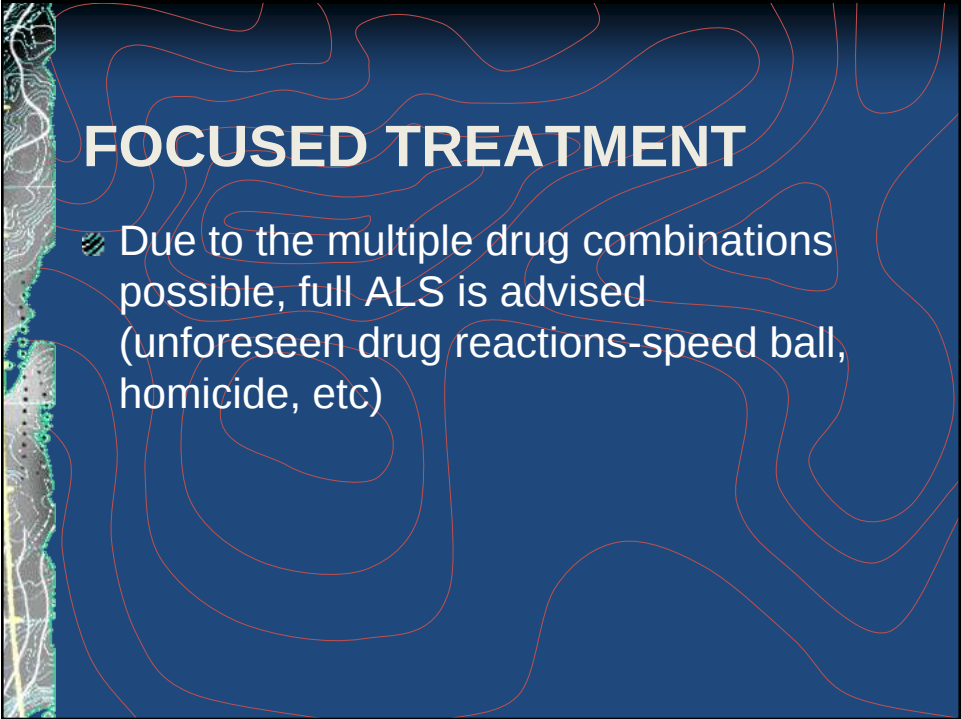
- Time released capsules, some may have more than 100 mg
- Often crushed and snorted, eliminating the "time release"
- May be crushed, diluted, and injected like traditional heroin

S/S OF AN OVERDOSE

- Pin Point Pupils
- Hypotension
- N/V
- Respiratory/CNS depression
- Aspiration and Hypoxia
- Hallucinations
- Other s/s? Think poly-pharm involvement
- Dirty Needles ("Diabetics")
- Cotton balls, Cig Filters
- Spoons w/ residue
- The bottom of a soda pop can is commonly used as a "spoon" to dissolve the heroin in because it is curved inward like a spoon. The bottom is torn off of a can as close to the bottom as possible.

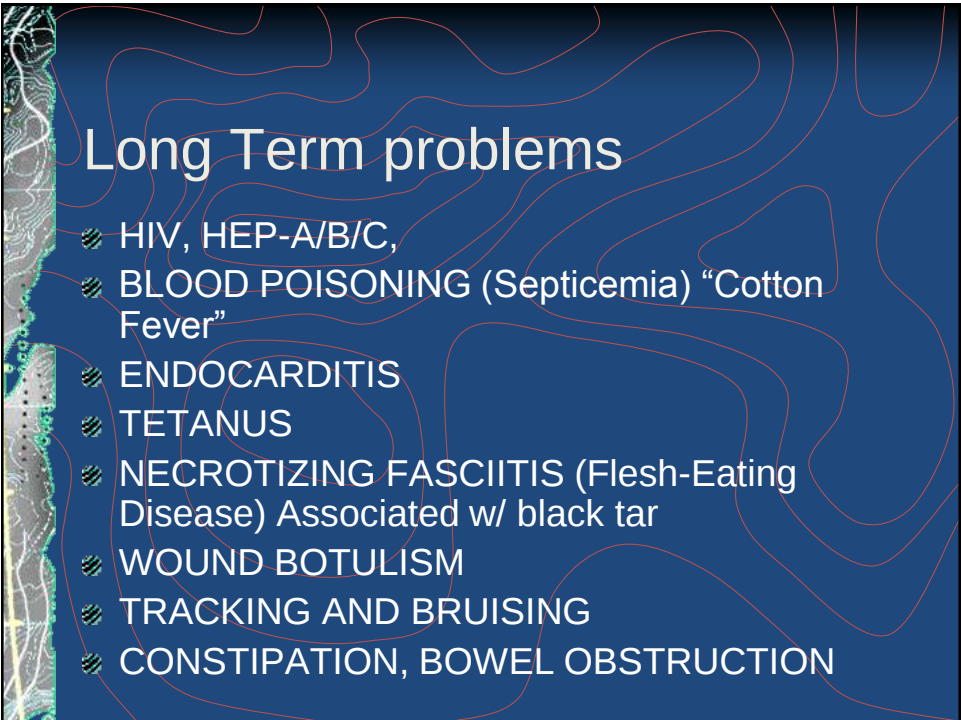
BASIC TREATMENT

- Ventilation/stimulation first
- Slow admin of Narcan, just enough to make them breath
 - Narcan 0.4 mg-2 mg traditional, may need higher doses
- High doses may be needed if drug is synthetic
- Watch for re-sedation due to Narcan's short duration



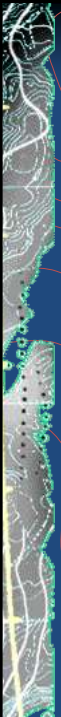
FOCUSED TREATMENT

- Due to the multiple drug combinations possible, full ALS is advised (unforeseen drug reactions-speed ball, homicide, etc)



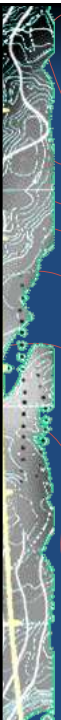
Long Term problems

- HIV, HEP-A/B/C,
- BLOOD POISONING (Septicemia) "Cotton Fever"
- ENDOCARDITIS
- TETANUS
- NECROTIZING FASCIITIS (Flesh-Eating Disease) Associated w/ black tar
- WOUND BOTULISM
- TRACKING AND BRUISING
- CONSTIPATION, BOWEL OBSTRUCTION



Interactions

- Cocaine: AKA: Speedball
- Heroin is thought to mask/temper some of cocaine's nastier effects
- “Homicide”, “Super Buick” Heroin, coke, scopolamine- Causes tachycardia, anticholinergic toxicity (remove the heroin via Narcan and the adrenergic and anticholinergic effects combine uninhibited)
- This is why its very important to give just enough Narcan to regain respiratory function



Dependence, Detox, and Withdrawal

- Medical detoxification is usually accomplished by giving decreasing doses of a long-acting opiate like methadone.
- While not truly physically addictive, Heroin withdrawal is clearly extremely uncomfortable and painful.
- The previously suppressed Locus Coeruleus is believed responsible for most of the clinical problems: anxiety, HTN, agitation

TAKE HOME INFORMATOIN

- Beware of the curveballs (poly Pharm)
- Slow minimal Narcan administration



The End

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