

Recreational Drugs

Bart Johnson, DDS, MS
Director, Swedish GPR
Seattle Special Care Dentistry



Really Dumb Joke

- What day is “Star Wars Day”???



May the Fourth...
be with you.

Credit where Credit Due!

- Many thanks to Hal Crossley (U. Maryland) who was inspirational in starting this series
- If you ever have a chance to hear him speak, “it’s a trip”!!!
 - Fun
 - Crazy
 - KNOWLEDGABLE!!



Disclaimer

- Thankfully, drugs have minimally touched my life and those of my family
 - A few stories will follow
- There is no better teacher than someone who has real experience; if my info needs a bit of “realism tweaking”, please let me know!
 - I want my lecture to be the best it possibly can be

Warning!

- This lecture is blunt
 - Disturbing pictures
 - Difficult themes
 - May hurt your personal experiences
- *It is totally okay to leave*
- “There cannot be light without dark”



Resources



For more information...

- National Institute of Drug Abuse
 - <http://www.nida.nih.gov/nidahome.html>



- Partnership for Drug-Free America
 - www.Drugfree.org



Definitions



Drug Abuse

- “A preventable behavior”
- Can have social use without addiction, but it is still abuse (“chippers”)



Drug Addiction

- “A treatable disease”
- Can become addicted to almost anything



Drug Dependence

- The patient’s body needs the drug
- Will go through withdrawal if the drug is discontinued
- Does not have the psychiatric element seen in addiction



Dependence

- **Facts:**
 - 10% of population is chemically dependent
 - Chemical dependency is a primarily chronic progressive disease



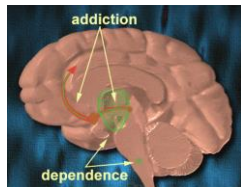
Dependence

- **Facts:**
 - Greatest physical dependency comes from benzodiazepines at higher doses
 - Marijuana does not create physical dependence
 - Caffeine causes mild dependency



Addiction

- **Critical Psychiatric/Behavioral Elements:**
 - Preoccupation with obtaining the drug
 - Compulsive use despite adverse consequences
 - Relapse after periods of abstinence
 - Denial of a problem



Addiction

- **Facts:**
 - Greatest addictive drug is crack cocaine... but no dependence
 - Many drug addicts have very controlling personalities... they want to let the drug take them to the edge, then control it



Tolerance

- **Need more drug to produce same effect**
 - Doses increase
 - Costs increase
 - Desperate measures increase
 - Men typically steal
 - Women typically turn to prostitution
 - Children can be sold for prostitution to feed parents' habits



Withdrawal

- **Physical**
 - "Worst case of flu I've ever had"
 - Insomnia, vomiting, diarrhea
 - 3-10 days of feeling horrible
 - Sweating, yawning, runny eyes/nose
 - Chills
 - Cold/clammy skin with piloerection ("cold turkey")
 - Abdominal pain / cramps
 - Leg twitches ("kicking the habit")
 - Desire to avoid this can lead to relapse



Withdrawal

- Psychological
 - Loss of the highs can bring depression
 - Desire to escape the depression can lead to relapse



Predisposing factors

- Genetics
 - "Addictive personality"
- Environmental
 - Drug availability
 - Children of abusing parents
 - Peers who use drugs
 - Witnessing violence
 - Early physical/sexual abuse
- Psychosocial
 - Pathway to addiction:
 - Experimentation
 - "Gateway drugs"
 - Nicotine
 - Alcohol
 - Social (key)
 - Abuse
 - Addiction

How can I tell if my kids are on drugs?

Information from:

THE PARTNERSHIP
AT DRUGFREE.ORG

Signs and Symptoms

- Behavioral changes
 - Change in relationships with family or friends
 - Emotional instability
 - Silent, uncommunicative
 - Loss of inhibition; loud, obnoxious behavior; laughing at nothing
 - Sullen, withdrawn, depressed
 - Unusually clumsy, stumbling, lack of coordination, poor balance



Signs and Symptoms

- Behavioral changes
 - Hostile, angry, uncooperative
 - Inability to focus, hyperactive
 - Unusually tired, lethargic, decreased motivation
 - Sleeplessness followed by long "catch up" sleep
 - Deceitful or secretive
 - Makes endless excuses



Signs and Symptoms

- Personal Appearance
 - Messy, careless appearance
 - Long sleeves in warm weather (hides marks)
 - Burns or soot on fingers or lips
 - Red, flushed cheeks or face
 - Poor hygiene



Signs and Symptoms

- Personal Habits
 - Smell of smoke on breath or clothes
 - Hiding/covering behaviors:
 - Chewing gum/mints/air fresheners to cover odors
 - Secretive phone calls/texting/Emails
 - Eye drops for red eyes
 - Locked bedroom doors
 - Sneaking out



Signs and Symptoms

- Home/Car issues
 - Missing:
 - Alcohol
 - R,s
 - Cigarettes
 - Money
 - Valuables
 - Evidence:
 - Eyedroppers, rolling papers, lighters, bongos made of toilet paper rolls and aluminum foil



Signs and Symptoms

- Health Issues
 - Nosebleeds
 - Runny nose
 - Frequently sick
 - Nausea/Vomiting
 - Weight gain/loss
 - Headaches
 - Skin lesions (picking from meth/cocaine)
 - Excessive thirst
 - Sores
 - Sweaty
 - Seizures
 - Depression



Signs and Symptoms

- School/work issues
 - Loss of interest in school and extracurriculars
 - Drop in grades
 - Truancy
 - Failure to do schoolwork



What is the Normal Physiology of the Brain?

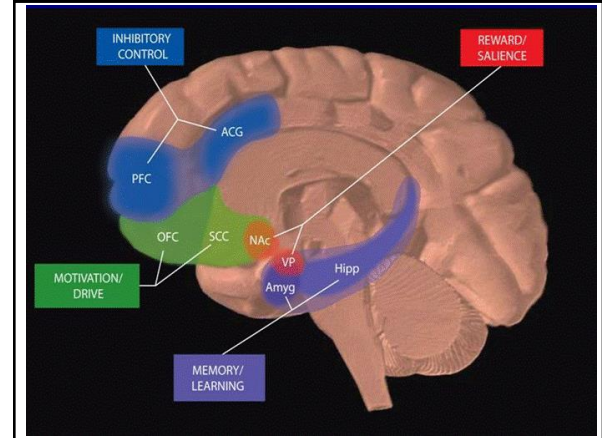
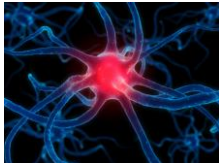


Neurotransmitters



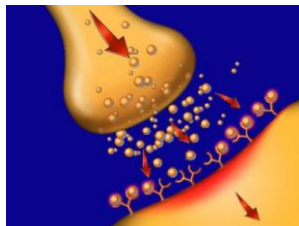
A Fascinating Observation...

- Understanding substance abuse has given us rich initial data about brain biochemistry
- Ironic, huh? Lemonade from lemons!



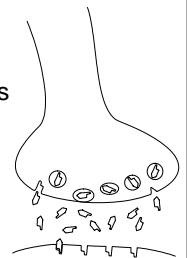
Endplate Physiology

- Endplate has vesicles full of neurotransmitters
- Receptor side has appropriate receptors
- *Hopefully vesicle supply and receptors are balanced*



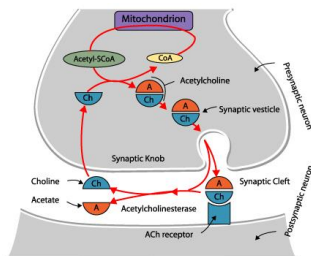
Endplate Physiology

- Endplate has reuptake ports
 - 90% of neurotransmitters are reused... frugal body!
- Endplate also has autoreceptors that match the neurotransmitter
 - When synaptic cleft is full, they shut off vesicle release.



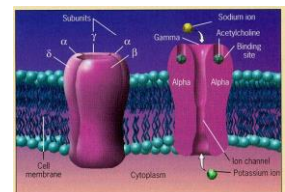
Acetylcholine

- Found at most synapse endplates
 - Alzheimer's is a deficiency of this neurotransmitter



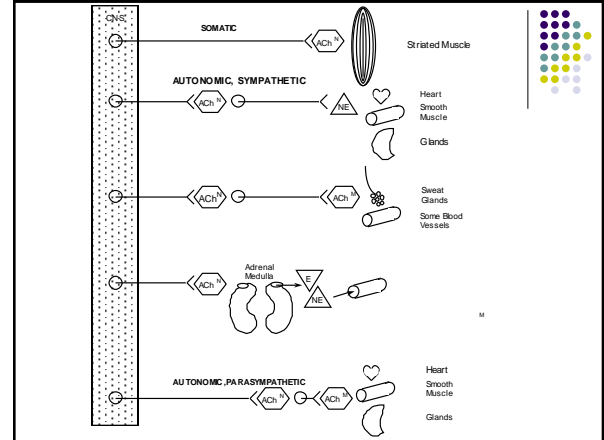
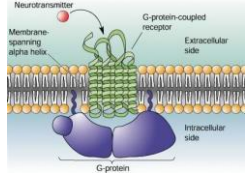
Acetylcholine

- Nicotinic receptors
 - Ach receptors that also respond to nicotine
 - Ion Channels
 - Fast / brief response
 - Blocked by curare
 - Found at first synapse

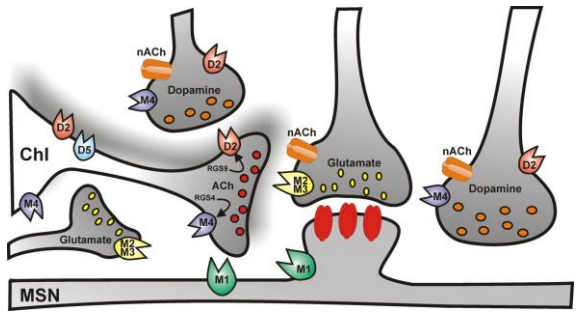


Acetylcholine

- Muscarinic receptors
 - Ach receptors that also respond to muscarine
 - 7-transmembrane protein that triggers secondary messenger system with G proteins
 - Slow / prolonged response
 - Blocked by atropine
 - Found at second synapse, mostly parasympathetic

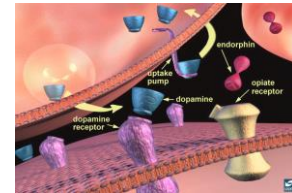


Many complex interrelationships!



Dopamine

- Your “pleasure” neurotransmitter
 - Involved in warm, bubbly feelings and orgasm
- Corpus striatum/pleasure center releases Dopamine



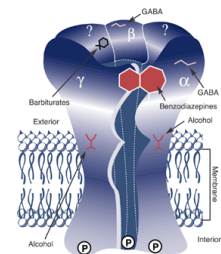
GABA

- Inhibitory neurotransmitter; depresses brain activity
- Chloride Ion Channel
- Found throughout the neuroaxis
- Especially evident in areas of the brain dealing with emotional responses
 - Limbic system



GABA

- Many depressant drugs occupy GABA receptors
 - Benzodiazepines
 - Barbiturates
 - Alcohol
 - Party drug GHB



Norepinephrine

- Primarily in the sympathetic autonomic nervous system
- Stimulates alpha and beta receptors
- Primes body for survival responses



Serotonin

- Affects mood... melancholy if insufficient
 - "I can laugh with my friends, but my heart is not smiling"



Serotonin

- Depression is believed to be an imbalance of serotonin supply and demand
 - May have reduced serotonin
 - May have insufficient receptors to trigger a response
 - May actually have too many receptors
 - Because normal serotonin supply cannot fill them all, they feel depressed



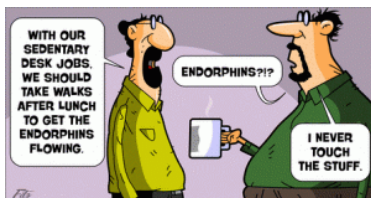
Serotonin

- SSRI's block the reuptake of Serotonin, lifting that melancholy



Endorphins/Enkephalins

- Natural mu receptor agonists
- Females have more receptors than males, tolerate pain better



Endorphins/Enkephalins

- Can be addictive
 - "Runner's high": endorphins released during exercise
 - May build tolerance... need longer distances to reach the high
 - Can have withdrawal... runners who get injured can become very morose



Substance Abuse Classes



Opiates

- Morphine
- Codeine
- Heroin
- Fentanyl
- Hydromorphone
- Oxycodone
- Hydrocodone



Hallucinogens

- Peyote
- Psilocybin
- Myristicin
- LSD
- PCP
- Bufotenin / Toad Licking
- Nitrous Oxide
- Volatile solvents



Stimulants

- Cocaine
- Amphetamines
- Meth, Crystal meth
- Ecstasy and derivatives
- Caffeine
- Mephedrone/Methylone
- Amyl Nitrite and Butyl Nitrite
- Atropine-containing substances



Others


- *Marijuana*
- *Depressants*
 - Barbiturates
 - Alcohol
- *Steroids*
 - Anabolic steroids




Others

- *Tobacco*
 - Cigarettes/Cigars
 - Snuff
- *Prescription Medications*
 - Opiates/opioids (analgesics/anti-diarrheals)
 - CNS depressants (barbiturates/benzos)
 - Stimulants (amphetamines)







Opiates





Definitions

- Narcotics/Narcosis/Narcolepsy
- Opiates: From opium
- Opioids: Has opiate-like properties




Definitions

- Opium: *Papaver somniferum*:
 - 10% Morphine
 - 0.5% Codeine (methylated morphine)



Opiate/Opioid Classes

- **Natural:**
 - Morphine
 - Codeine
- **Semisynthetic:**
 - Diacetylmorphine (Heroin)
 - Hydromorphone (Dilaudid)
 - Oxycodone/Oxycontin
 - Hydrocodone
 - Oxymorphone



Opiate/Opioid Classes

- **Synthetic:**
 - Methadone
 - Fentanyl
 - Alfentanil
 - Remifentanil
 - Sufentanil
 - Paraflorofentanyl (China White)

Opiates/Opioids

- **Pharmacology**
 - Codeine, Heroin, and the semi-synthetics are converted to morphine in the body
 - Cycle is high for 3-4 hours, come down for 2-3 hours
 - Withdrawal starts 6-8 hours after last dose

Opiates/Opioids

- *Why used/abused:*

- Rush of euphoria!
 - Lasts 1-2 minutes
 - Like sexual release, provides release of tension



Opiates/Opioids

- *Why used/abused:*

- Followed by peaceful sedation
 - Heaviness/distance
 - Alternates between wakefulness and drowsiness
 - CNS sedation/clouding of mental process
 - Deep satisfaction/comforting glow
 - Problems seem far away



Opiates and Pain

- *Facts:*

- People in pain will sequester narcotics to their pain centers
- As the pain diminishes, the narcotics move to fill their addictive centers
- Control of acute pain for an appropriately short term does not create addiction



Opiates/Opioids

- *Side Effects:*

- N&V
- Constipation
- Respiratory depression / Asphyxia
- Constricted pupils (miosis)
- CNS depression (narcosis; "on the nod")
- Histamine release:
 - Flushed appearance
 - Hypotension
 - Itchy nose



Opiates/Opioids

- *Secondary Effects:*

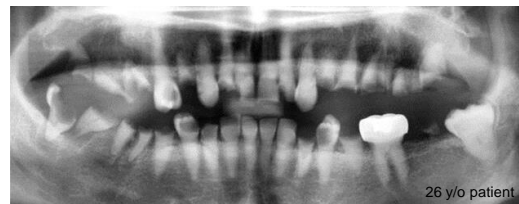
- Altered salivary buffering
- Sugar cravings
- Dehydration (from sugar cutting agents)
 - Dry skin
 - Dry mouth



Opiates/Opioids

- *Secondary Effects:*

- All of the above, plus being high and not toothbrushing = Dental caries



Heroin

**“It’s so good,
don’t even
try it once”**
HEROIN
IN PERSPECTIVE



Heroin

- **Source:**
 - Morphine plus glacial acetic acid, heat and pressure = Diacetylmorphine
 - Manufactured in SE/SW Asia, Colombia and Mexico
 - Most coming into the USA is 100% pure



Heroin

- **How used:**
 - Oral (not typically taken this way)
 - Snorted (nasal transmucosal)
 - Requires larger doses for a good high
 - Smoked (pulmonary transmucosal)



Heroin

- **How used:**
 - Injected
 - Most addicts need it injected once tolerance sets in



Heroin

- **How used:**
 - **Doses**
 - Insufflation 5-20 mg/dose
 - Injection 5-10 mg/dose
 - Lethal dose is usually ~200 mg
 - Some experienced addicts can hit 300-500 mg/day



Heroin

- **How used:**
 - The highs disappear with tolerance:
 - “After a short while, I took heroin to prevent withdrawal, not to get high”



Heroin

- Injection techniques
 - Dissolve with heat and water, inject



Heroin

- Injection techniques
 - "Smack":
 - Leave tourniquet on until drug is in vein to allow tight bolus to "smack" the brain



Heroin

- Injection techniques
 - "Jerking off":
 - If dose is too large to solubilize, put the powder in syringe, enter vein, pull up blood, inject, repeat
 - Looks brown: "Gravy"



Heroin

- Injection techniques
 - Sweet spots:
 - Lateral canthus of eye, under tongue, penile veins



Heroin

- Injection techniques
 - Popping:
 - IV access becomes impossible
 - SQ injections; almost always get infected and give a classic sore that scars over



Heroin

- Injection techniques
 - Popping:
 - May nick capillaries/vein (cut down) and use eyedropper to infuse medication



Heroin

- Injection notes

- Tracks:

- Scars form from chronic infection
 - Often hidden with tattoos
 - My IV on the back of the guy's knee



Heroin

- Cutting:

	Concentration	Amount
Start with 1 kilo of 100% heroin... easily smuggled (2.2 lbs)	100%	1 kilo
Add 1 kilo of sugar (usually mannose)	50%	2 kilos
To each of those, add 1 kilo of sugar	25%	4 kilos
...Continue	12.5%	8 kilos
...Continue	6.25%	16 kilos
...Continue (this is the % dose commonly used)	3.125%	32 kilos
1 kg = 1,000 gm = 1,000,000 mg = about 100,000 – 200,000 IV doses		

Heroin

- Cutting:

- Mannose
 - Commonly used
 - Quinine
 - Tastes bitter; added to reduce sweetness and fool the buyer
 - Anti-malarial: Originally added due to spread of malaria by dirty needles
 - Talc
 - Another non-sweet cutting agent
 - "Millions of splinters" into the lungs: Fibrosis



Heroin

- Injection Diseases

- Malaria
 - Tetanus
 - Pneumonia
 - Pulmonary fibrosis
 - Bacterial endocarditis
 - Myocarditis
 - Hepatitis
 - (How to avoid it? "We make sure the yellow guy is the last to use the needle")

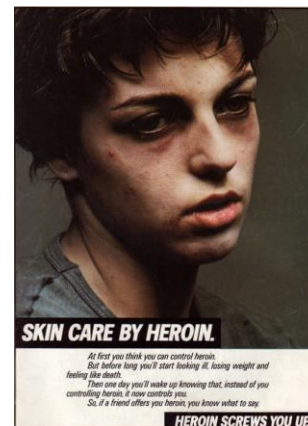


Heroin

- Urine test

- >300 ng/ml is considered positive
 - Test will be positive for 2-3 days after last dose

- Random testing has proven to be the greatest deterrent for substance abuse



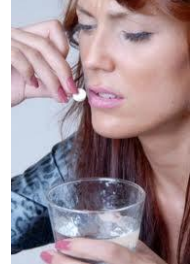
Prescription Opiates

“A free high, straight from the medicine cabinet”



Challenging problem!

- 1 in 5 teens has abused R_x pain relievers
- Signs of abuse:
 - Medicine bottles without illness
 - R_x bottles missing
 - Disrupted sleeping/eating patterns



Oxycodone

- “Oxy”, “O.C.”, “Percs”
- Favorite of the prescription-abusers
 - Converted to morphine *in vivo*
 - Fastest uptake of any of the R_x narcotics
- Oxycotin: Slow-release
 - Worth ~\$1/mg street value



Other R_x Narcotics

- Hydrocodone (“Vike”)
- Hydromorphone
 - Taken orally or solubilized and injected
 - “Pill fill” fibrosis

I ♥
Vicodin

Other R_x Narcotics

- Fentanyl
 - OMFS/Anesthesiologist favorite drug of abuse
 - 100x more potent than morphine
 - Often injected under watchband or underwear elastic to hide track marks



Sizzurp/Purple Drank

- R_x Cough syrup with codeine
- Mix with candy such as Jolly Ranchers
- Mix with Soda
- Bright colors/sweet taste... easy to keep drinking and OD
- Said to give an instant euphoric high



A Few Final Words on Opiates

- Chronic narcotic users feel more pain
 - Receptors dull
 - Exogenous opiates cause both receptor and autoreceptors to fill
 - Fools body into thinking you do not need more, so production shuts down
 - Many relapses occur waiting for the body to begin making endorphins/enkephalins again



My two patients


- On narcotic Rx rehab
- Good kids from good families
- Both with very carious teeth
 - Tens of thousands of dollars of care necessary
- It was very easy to get hooked



Marijuana



PLEASE KEEP OFF THE GRASS
and other illegal drugs.



*Unless in WA or CO...!

Bart's Story




I am afraid to be alone with my own mind
- Sylvia Plath





Definitions

- Common names:
 - Pot
 - Grass
 - Hash
 - Hemp
 - Khif
 - Giggle smoke
 - Mary Jane
 - Weed
 - Roach
 - Rope



Gateway drug

- Peak years for 1st time MJ use are 14-16 y/o
- Adolescent mind is still developing
 - Regular exposure to psychoactive agents does irreparable harm
 - Linked to:
 - Teenage mental illness
 - Suicide / Accidents
 - Pregnancy / STDs



Gateway drug

- Not generally addictive, no withdrawal
 - That said, addiction can happen...
- Makes users think other drugs will be similar
- Other drugs used to combat negative effects of MJ

**NO
PROBLEM**

The Plant

- Two common species:
 - *Cannabis sativa*
 - No Δ -9 THC
 - *Cannabis indica*
 - Has Δ -9-Tetrahydrocannabinol
- Leaves always serrated and in clusters of 5-7-9
 - Always odd number



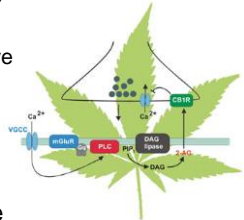
The Plant

- Hemp:
 - Stems have strong fiber
 - Rope
 - Paper
 - Cloth
 - (Historically) Bowstrings
- Has been known to be used for over 8,000 years



The Plant

- MJ has approximately 450-500 different chemicals
 - 23 of which are psychoactive
 - Δ -9 THC is the major one
 - High levels benzo(a)pyrene
- Much research devoted to what the active agents are and what they do
 - Endocannabinoids



The Plant

- Sex of the plant is very important
 - Only the females have psychoactive drugs
 - Cuttings are put it under a grow light
 - If it flowers, it is a female
 - Male plants are destroyed
- Marijuana seeds do not contain Δ -9 THC
 - Not illegal to possess



Alternate Drug Forms

- Hashish:
 - Sticky unadulterated resin scraped from the tops of the cultivated female plants
 - Isopropyl alcohol extraction; made into slabs
 - Eaten, smoked, tea
 - 3x concentration of Δ -9 THC
 - Far more potent than Marijuana leaves



Alternate Drug Forms

- Sensimilla:
 - "Without seeds"
 - Flowers from female plants never fertilized, therefore no seeds
 - Highest concentration of psychoactive drug as the THC has not been reduced by the seeds



General Information

- *Source:*
 - Some states allow "personal use" supply
 - Most marijuana is now imported into USA
 - "BC bud"
 - Cigarette boats
- Law enforcement has been successful eradicating farms
 - Helicopter patrols
 - Electricity monitoring



How used

- Pharmaceutical oral tablets
 - "Marinol"
 - Not as effective as the natural plant
 - Most users do not like this version



Marinol 
 (dronabinol) Capsules 2.5 mg
 5 mg 10 mg
 A unique pathway to multiple benefits

Smoking Marijuana

- Much more damaging than tobacco cigarettes
 - Combustion temperature is much higher
 - Oral damage
 - Smoked differently
 - Goal is to keep it in the lungs longer



Smoking Marijuana

- Bong/Hookah/Water pipe
 - Not illegal to sell or possess
 - Cools smoke and removes water-soluble impurities
 - Δ -9 THC is lipid soluble; not removed
- Removing impurities results in a much higher blood level of Δ -9 THC



My Old Lady

- Her story
 - Loose tooth
 - Rampant perio disease
 - Oral changes consistent with chronic heating



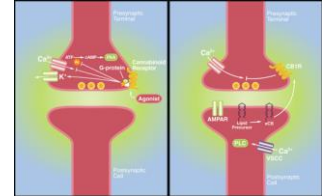
My Old Lady

- Had to recommend she use a Bong to lessen the impact on her teeth and oral tissues
- Sigh... how do I get myself into these situations??



Pharmacologic Effects

- Δ -9 THC mechanism of action is complex
 - Endocannabinoids function with brain neuromodulation
 - Blunts release of neurotransmitters
 - Inhibits:
 - Learning
 - Movement
 - Memory



Pharmacologic Effects

- Biggest problem with MJ is memory loss
 - Dulled thinking is the short-term effect
 - Permanent memory loss is the long-term consequence
 - Users who quit often remark on how clear their thinking becomes once stopped



Why use it?

- Euphoria (sense of well-being)
- Dreamy state of relaxation (“stoned, dude...”)



Why use it?

- Peer pressure/encouragement
 - Said to be less damaging than liquor
 - “Not habit forming, no withdrawal, no hangover, cheaper”
 - **WRONG!!**



Side Effects

- Distortion of time and space
- Disinhibition



Side Effects

- Red eyes
- Sometimes very dilated pupils



Why use it?

- Unconcerned about personal problems
 - Adolescents escaping problems of growing up
 - “Amotivational Syndrome”
 - Lack of ambition, motivation, personal achievement
 - “It made things I worried about seem unimportant”



Side Effects

- Increased appetite (munchies)
 - Effect of the drug on Hypothalamus
 - Good for HIV and cancer patients
- Disoriented behavior (Dysphoria)
- Paranoia



Side Effects

- Decreased cognition
 - Trouble making decisions
 - Remembering simple things like spelling
 - Procrastination due to memory issues
 - Poor concentration
 - Shortened attention span
- All are magnified in the adolescent brain



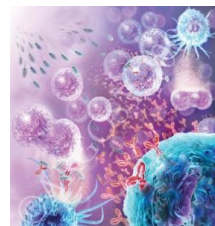
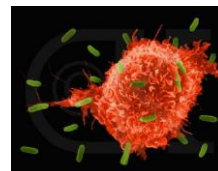
Side Effects

- Distortion of time and space
 - Objects look farther away = traffic accidents
 - Motor impairment lasts longer than euphoria
 - Lasts for 24-48 hours... impaired professionals on Monday morning



Side Effects

- Suppression of immune system
- Damage to lung tissue



Testing

- Federal guidelines >100 ng/ml
- Fat soluble, sequesters in lipid stores
 - Can detect Δ -9 THC in the urine of the casual user for 2-4 days
 - In the heavy user, can detect x 30-60 days
- Secondary exposure to MJ smoke will test negative



What's the WA Law Now?



Washington Law Summary

- Legalizes use of MJ in adults >21 y/o
- Cannot grow for personal use unless authorized for medicinal purposes
- Possession of 1 oz MJ, or 16 oz of "solid infused forms", or 72 oz "liquid infused" is legal
- Set legal DUI limits to 5 ng/mL

What's the CO Law Now?



Colorado Law Summary

- Recreational:
 - Adults >21 y/o can grow up to six plants in a privately locked space
 - Possess up to 1 oz while driving
 - Gift up to 1 oz to other >21 y/o adults
 - Private use only; public consumption is illegal
 - Tourists can use it in-state, but cannot transport across state lines

Colorado Law Summary

- Medicinal:
 - Adults >21 y/o can grow up to six plants in a privately locked space
 - Possess up to 2 oz while driving
 - MDs can give permission to possess more
 - Private use only; public consumption is illegal
 - Cannot use in a manner which may endanger others (i.e, driving)
 - Can only buy from a dispensary, not a pharmacy (due to Federal designation as a Class I drug)

Colorado "Fun" Facts:

- June 2014 had \$24.7M in sales
 - January to June, 2014 had \$115M in sales
 - = \$20M in taxes
 - 120 recreational dispensaries
 - 500 medical dispensaries
- WA just started, so we need to catch up... ☺



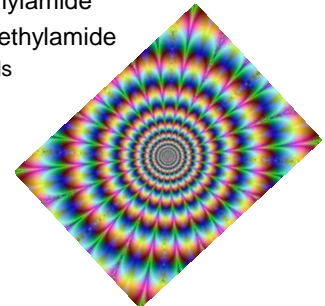
Hallucinogens

"Are you willing to experiment with your sanity?"



Classes

- Lysergic Acid Diethylamide
- Lysergic Acid Monethylamide
 - Morning glory seeds



Classes

- Tryptamine derivatives
 - Dimethyltryptamine (DMT), Diethyltryptamine (DET), Dipropyltryptamine (DPT)
 - Toad Licking (Bufotenin)
 - Psilocin
 - Psilocybin (phosphorylated Psilocin)



Classes

- Amphetamine analogues
 - Dimethoxyamphetamine (DMA)
 - Peyote (Mescaline)
- Myristicin
- Phencyclidine (PCP)
- Ketamine



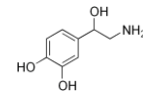
General Information

- Most resemble three major neurotransmitters:
 - Dopamine
 - Norepinephrine
 - Serotonin
- The mode of action is not known
- Users of hallucinogens tend to stay with them
 - Polysubstance abuse is rare

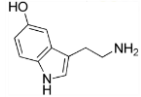


Similar Structures!!

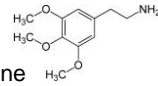
- Norepi



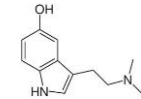
- Serotonin



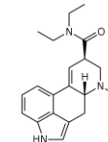
- Mescaline



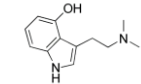
- Bufotenin



- LSD



- Psilocin



Why use Hallucinogens?

- Changes the way we experience reality
 - New ways of looking at the world
 - Synesthesias: "Hear" colors, "See" sounds
 - New insights into personal problems
 - "Mind-expanding"
- Biochemically related to dreaming?



Why use?

- Religious/Tribal Shamans



Why use?

- Psychic effects:
 - Time sense is distorted
 - Good stuff:
 - Euphoria
 - Elation
 - Serenity
 - Ecstasy
 - Depersonalization
 - Separation between self and environment



Why use?

- Perceptual effects:
 - Rarely frank hallucinations
 - Visual illusions instead:
 - Colors are bright and vivid, objects are distorted and undulating
 - "Fixed objects appear to shift from near to far and colorful, dreamlike images occur as vivid streaming filmstrips even with the eyes closed."



So what's wrong with that?



Bad Effects

- May completely lose touch with reality
 - Temporary or permanent psychosis
 - Religious mania is a recurrent theme



Bad Effects

- Emotional changes
 - Panic attacks, delusions, fear/terror, depression, feeling of insanity, loss of self-confidence, anxiety, worry, doubts, too much to handle at once



Bad Effects

- Flashbacks
 - May occur months to years later
- Physical changes
 - Cardiovascular
 - HTN and Tachycardia
 - Tremors
 - Weakness
 - Chills



LSD



LSD – General Info

- The mode of action is not known
 - Hyperarousal of the CNS?
 - Probably by increasing serotonin turnover
- Synthesized
 - Drug today is more pure, more potent than in the 60's



LSD – How used

- “Microdots”, “blotters”, “tattoos”, “postage stamps”
 - Blotting paper with drop LSD, dried, rubber stamped to mask the powder
 - Sold to middle and high school kids... collectibles
 - Used by licking/resolubilizing on tongue
 - ~25 µg of drug each
- “Window panes”
 - Knox gelatin mixed with LSD



LSD Stamps



LSD Trips

- “Set and setting” is very important
 - May take benzodiazepines concomitantly
 - Non-using friend may act as “guide”
- User typically has full recall of their trip
- Somatic, perceptual and psychic effects overlap

Other Hallucinogens

Mescaline



Mescaline

- From Peyote cactus
 - Resembles clove of garlic
 - Dried and chewed
 - Made into tea
 - Smoked



Mescaline

- Effects like LSD, but more perceptual and less euphoria
- Navaho Shaman Story



Psilocybin



Psilocybin

- Phosphorylated Psilocin
 - From *Psilocybe cubensis*
 - Most popular hallucinogenic mushroom



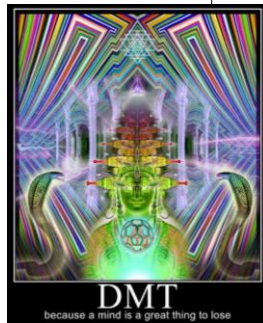
Psilocybin

- Grown best in feces of ruminant animals
 - "Cow flops"
 - Taken as a tea or smoked
- Like LSD, but more euphoria and shorter duration



DMT

- Dimethyltryptamine
- Very short duration
 - 45 minutes or so
- "Businessman's trip"



Ayahuasca / Yagé

- Brew made from hallucinogenic shrub leaves and a vine
 - Many variations / recipes
 - Shrub has DMT, vine has MAO-I
 - MAOI inhibit gut metabolism to allow the DMT to pass unchanged into the blood from the intestines



Ayahuasca / Yagé

- Shamans use it for the psychedelic effects
 - Synesthesias, visual/auditory stimulation, great elation, fear and/or illumination
- Brujos masquerade as Shamans and entice tourists to drink it
 - Said to be stealing your life energy and power



Ayahuasca / Yagé

- Often causes severe vomiting “the purge”
 - “Rids your body of evil”
- Legalized for religious rituals in Brazil



Toad Licking - Bufotenin

- *Bufo alfaricus* species of toads
 - Colorado River toad
 - Giant toad

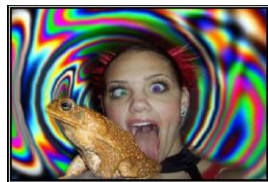


Toad Licking - Bufotenin

- When frightened, the toads secrete mucus from their parotids containing Bufotenin
- To prepare:
 - Wipe mucus onto filter paper, or “milk” the glands
 - Microwave to dry, then smoke

Toad Licking - Bufotenin

- Notes:
 - Drug is destroyed in stomach, so licking must be transmucosal
 - Smoking gives much better highs than licking the actual toad
 - I assume much better taste too...bleah!



Myristicin



Myristicin

- Nutmeg Tree *Myristica Fragrans*
 - Found in Indonesia
 - "Spice Islands"
 - Spices come from the fruit
- Nutmeg
 - The seed of the fruit
- Mace
 - The husk of the fruit

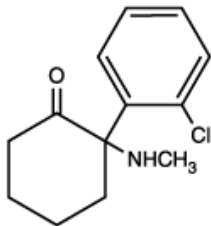


Myristicin

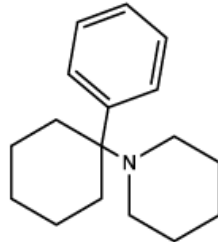
- How used:
 - Ingest 2 tablespoons of nutmeg or mace mixed in milk or orange juice
 - Onset is 4-5 hours
 - Lasts for 24-48 hours
- Most common to have alternating periods of drowsiness and delirium

PCP and Ketamine

KETAMINE



PHENCYCLIDINE



PCP (Angel Dust)

- Phencyclidine
 - Dissociative Anesthetic
 - Patients feel no pain
 - Tragic outcomes if altercations with police
 - Ketamine is similar
 - Nickname "Hog" from veterinary Ketamine
 - Ketamine sprayed on parsley or MJ, then smoked
- Only hallucinogen that experimental animals self administer

Salvia Divinorum

- Psychoactive/ hallucinogenic plant native to Oaxaca Mexico
- Mazatec Shamans use it for "visionary states of consciousness"
 - Also believe the plant is an incarnation of the Virgin Mary



Salvia Divinorum

- Known kappa opioid receptor and D₂ receptor agonist
 - No effect on 5HT_{2a} serotonin receptor, the "classic hallucinogen" receptor
 - Relatively non-toxic

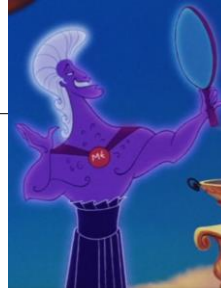


Salvia Divinorum

- Shamans drink it as a tea; abusers generally smoke dried leaves
 - Still legal in many states in the USA
 - Short action; 15-20 minutes
 - Trip guide is recommended

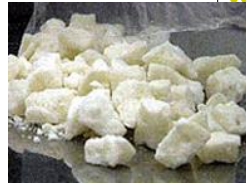


Cocaine



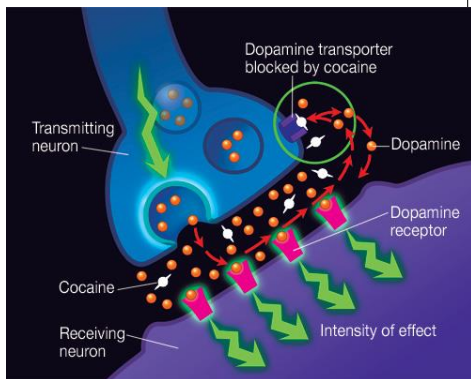
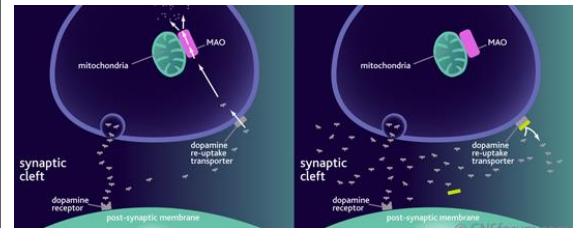
Common Names

- Snow
- Coke
- Blow
- Toot
- Flake
- Crack
- Many others



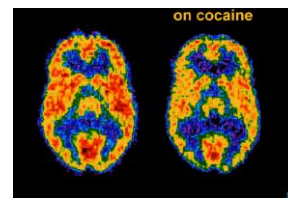
General Information

- Prevents reuptake of dopamine
 - Your "pleasure" neurotransmitter
 - Cocaine is an "SDRI"



General Information

- Cocaine also decreases brain glucose utilization
- "Starves" brain of it's food



General Information

- “The great mimic” of all things pleasurable
 - Food
 - Water
 - Sex
 - Self-esteem



Painting by JW Waterhouse

The story of Echo, Hera, Narcissus and Nemesis

General Information

- One of the most addictive drugs known
 - Can get hooked after one use
- Cravings can return after years
- Treatment is difficult
 - No antagonists exist
 - No “methadone-like” replacement meds

General Information

- The low is proportional to the high
 - Crash from crack cocaine is worse than any drug
- Desire to get high again while crashing is great



Sources

- South America (Andes Mountains)
 - Peru
 - Bolivia (>0.5M acres)
 - Colombia
 - These three account for 99.9% of the world's cocaine
- United States consumes 75% of the world's supply



The Plant

- *Erythroxylon coca*
 - Needs high altitudes and low levels of oxygen
 - Plants can grow to 12 feet
 - Kept trimmed to allow leaves to be stripped



How Processed

- Strip/macerate the leaves
- Place in sulfuric acid, stomp to break up stems
 - Woody structure dissolves in the acid into a paste



How Processed

- Add sodium carbonate to neutralize the acid and precipitate the drug
- Dry in the sun = Bazuko paste
- Further refine to cocaine hydrochloride



Yields

- 7-8 pounds of leaves yields 1 oz of cocaine
- 135 million pounds of leaves are processed for the US market



Further Processing

- Cocaine HCL melts at 198° C
 - Cannot smoke; must inject or snort
- “Freeing the base” (=“Freebasing”) makes the more potent Crack Cocaine
 - Melts at 98° C, so can smoke this form
 - More potent delivery
 - Named “crack” because it snaps when heated
 - Synonymous with cocaine base



Freebasing

- Formerly:
 - Dissolve powder in water, add Drano®
 - Alkaline precipitates the base cocaine
 - Add gasoline
 - Base separates into the gasoline layer
 - Pour off the gas, gently heat it until it evaporates
 - Leaves the free base
- Many injuries from fires



Freebasing

- Now:
 - Dissolve cocaine HCL powder into water
 - Add sodium bicarbonate
 - Cocaine base precipitates and floats
 - Skim and dry



How used

- Oral
 - Destroyed in stomach
 - Users often eat the drug if police arrive



How used

- Snorting (nasal transmucosal)
 - Most popular method
 - Onset 3-5 minutes
 - Duration 1 hour



How used

- Smoke
 - Must use cocaine base (crack) form
 - More impact, more intense high
 - More molecules get into brain via lungs
 - Onset 8-10 seconds
 - Duration 10-12 minutes
- Much more addictive as onset is faster and duration is shorter, so more drug is used



How used

- Inject
 - Cocaine HCL is injectible, converting to the base at physiologic pH
 - Onset 15-30 seconds
 - Duration 30 minutes



How used

- Speedball:
 - Combination of Cocaine and Heroin
 - Cocaine provides the intense upper
 - Heroin taken to balance and give euphoria
 - Co-negates anxiety from Cocaine and sedation from Heroin
 - Cocaine wears off first; can have fatal respiratory depression
 - Comedians John Belushi and Chris Farley died of this



Why use it?

- Feels GREAT (dopamine is our pleasure drug!)
 - Euphoria
 - Pleasure
 - Sexual arousal
 - Increased energy
 - Increased sense of intellectual functioning
 - "Puts me on my A+++ game"

What is wrong with this?

- Tolerance develops
 - Pleasure/reward centers intensely/artificially stimulated
 - Become exhausted
 - **Inability to experience further pleasure**
- Depression, anxiety set in
 - = Cravings for more Cocaine
 - Pt needs higher doses
 - "Chasing the high"



Side Effects - Early

- Loss of appetite
- Depression
- Dysphoria
- Anxiety
- Sadness
- Apathy
- Insomnia
- Nasal membrane necrosis



Side Effects – Late

- Hallucinations:
 - Paranoia, Hypervigilance,
 - Delusions
 - Auditory, Olfactory, Visual, Tactile ("coke bugs")
- Psychosis
- Die of:
 - Hyperthermia due to dehydration
 - Cardiac arrhythmias
 - Seizures ("Cocaine Frenzy")
 - Suicide



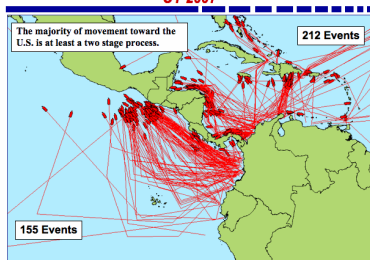
Testing

- No local anesthetic will test positive for cocaine except cocaine
- Can find metabolites 4-5 days after use



Smuggling it to the USA

Suspect Maritime Activity CY 2007



Smuggling it to the USA



Smuggling it to the USA



Body Packers / "Mules"

- Smuggling Cocaine
 - Fast for several days
 - Eat okra... makes esophagus slimy
 - Swallow condoms or fingercots full of cocaine after dipping in mineral oil
 - Must remove before 10-12 hours, or will get fecal odor and cannot sell
 - Use enemas and laxatives to speed the transit



Body Packers / "Mules"

- If condoms split open, body packers generally die of overdose
- Seizures can be so intense that tongues are lacerated and teeth fractured in the death throes



Stimulants



Classes

- Stimulants are two main groups:
 - Amphetamines
 - Meth, Ecstasy, GHB, Dextroamphetamine, "Bath salts"
 - Sympathomimetics
 - Epinephrine, Ephedrine

Pharmacologic action

- Amphetamines release CNS catecholamines
- Sympathetic stimulation
 - "Fight / Flight / Fright" survival system
 - Feel no pain if injured or striking out
 - Clarity of thought to escape
 - Profound paradoxical peacefulness in the crisis
 - Cardiac and pulmonary efficiency
- "Adrenaline Junkies"

Why use?

- Disinhibition
 - “Club drugs”: Dance more aggressively and energetically
- Euphoria



Why use?

- Love of “the rush”
 - Huge amounts of energy
 - Completes tasks faster, but increases mistakes
 - Better athletic performance



Why use?

- Sensory enhancement
 - Olfactory, visual, tactile
 - Increased alertness
 - Relief of fatigue, particularly if sleep deprived
 - (delays necessity of sleep, not eliminates it)



Side Effects

- Weight loss
 - Increased metabolism, appetite suppression
- “Sweats”
 - Hyperhidrosis
 - From energy expenditure and heat production
- Anxiety
- Restless, jittery
- Clenching
 - Use of pacifier

Side Effects

- Hypertension
- Acute renal failure if dehydrated
- Death due to hyperthermia
 - “Rave” concerts
 - Warmer areas (i.e., SW United States)



Amphetamines

- Dextroamphetamine
 - Dexies, Black Beauties
 - Often used as Rx for narcolepsy or ADD
 - Kids who legitimately need them must agree they will not share their meds with others
- L-methamphetamine
 - A major ingredient in Vicks Vapo-Rub
 - Has a cardiac effect but not much CNS effect

Methamphetamine



Methamphetamine

- Meth, Speed, Crystal, Crank
 - Wide use in Pacific NW; less in other areas of USA
 - Easy/cheap to make
 - Requires explosive solvents = fires/explosions



Methamphetamine

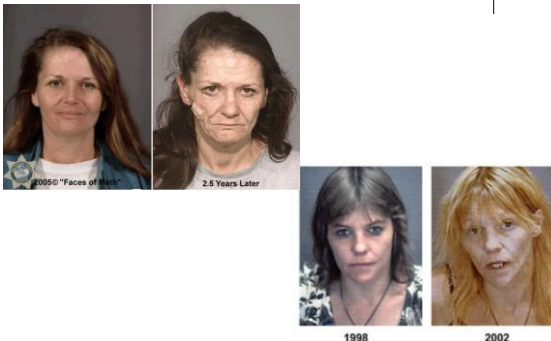
- Known for rapid xerostomic caries pattern
 - Sympathetic stimulant = parasympathetic antagonist
 - Poor oral hygiene
 - High carbohydrate diet for energy



Faces of Meth



Faces of Meth



Another sad outcome...



Methamphetamine

- Name comes from **Methyl-alpha-methyl-phenylethylamine**
- Made from Ephedrine or Pseudoephedrine
- Naturally occurs in Acacia spp. trees

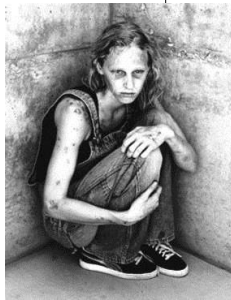


Methamphetamine

- Very lipophilic, therefore very fast uptake into the brain
- Appears to bind the TAAR1 Thyronamine receptors
- Probably “shakes the neurotransmitters tree” by transporter flow reversal:
 - Norepi
 - Serotonin
 - Dopamine

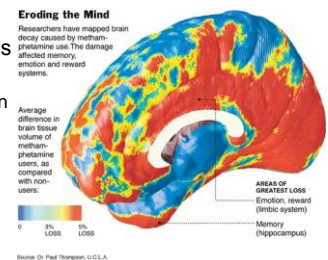
Methamphetamine

- Subjective pleasure from the drug is related to the speed of the blood level rise
- Typical dose is 100 mg – 1000 mg

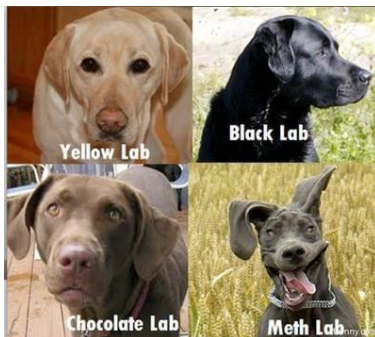


Methamphetamine

- Neurotoxic:
 - Causes Parkinson's disease
 - Dopamine oxidation may actually aggravate the synaptic cleft degradation
 - 20% show psychosis; often schizophrenia



The Proof...



How used

- Smoking
 - Vaporizes, not burns
- Sometimes used vaginally/rectally



Why use it?

- Rewards the user with pleasure chemicals
 - More energy
 - Feelings of super-human strength
 - More awake and alert
 - No fatigue for 2-24 hours
 - Powerful, intelligent, overall euphoric



Why is this bad?

- Artificial satiation of needs causes brain centers to shut down
 - Sleep
 - Thirst
 - Hunger



Why is this bad?

- Soon the “feel good” neurochemicals run out and plummet below baseline = Crash
 - Little energy left for recovery
 - Immune system runs down = illness



From the print ad campaign from the Partnership for a Drug Free America.



Club Drugs



MDMA

- 3,4-methylenedioxyamphetamine
 - “Ecstasy”
 - “ADAM”



MDMA

- All the effects of amphetamines plus:
 - Mild hallucinogen
 - Profound sense of empathy/closeness
 - Empathy + disinhibition + energy = sexual promiscuity
 - The empathogen component is of great research interest



MDMA analogues

- MDEA
 - Methylenedioxyethamphetamine
 - “Eve”
- MDA
 - Methylenedioxyamphetamine
 - “Love pill”
 - Can result in severe depression (markedly decreased serotonin) leading to suicide

MDMA analogues

- Paramethoxyamphetamine
 - “Death”
 - “Mitsubishi Double Stack”
 - Contaminant of MDMA
 - Extremely cardiotoxic



GHB/GBH

- γ -hydroxybutyrate
 - “Liquid X”, “Liquid E”, “Fantasy”
 - Industrial solvent GBL (γ -butyrolactone) + NaOH and you get the drug in about ten minutes (in your bathtub)
 - Colorless, odorless *salty* tasting liquid, occasionally found as powder.



GHB/GBH

- Acts a lot like Ecstasy, but more dangerous
 - Euphoria
 - Enhanced sense of touch
 - Increased sociability
 - Amnesia
 - Decreased inhibitions
 - Increased sexual activity and libido
 - ... or it knocks you out and becomes a date rape drug



“Bath Salts”

- Three drugs:
 - Methylenedioxypropylvalerone
 - Mephedrone
 - Methyloone
 - Street chemists are creating newer pyrovalerone derivatives
- Marketed as “Bath Salts” to avoid FDA issues
 - They are NOT true bath salts... it's a false front



“Bath Salts”

- Synthetic Stimulants
- Similar to Khat (discussed later)
- From a user:
 - “Fine China delivers a perfect blend of euphoria and energy, with even the smallest amount! I bought the 500mg size and still have almost half left after extensive testing.”



The Dark Side...

- Emergency Depts are reporting:
 - “People arriving so agitated, violent and psychotic that a small army of medical workers was needed to hold them down”
 - “Sometimes even large doses of sedatives failed to quiet them”
 - “These people were completely disconnected from reality and in a very bad place”
 - “If you gave me a list of drugs that I wouldn’t want to touch, this would be at the top”



The Dangers:

- Severe tachycardia and hypertension
- Hyperthermia
- Renal failure
- Psychoses and Paranoia, often permanent?
- “If you take the worst attributes of meth, coke, PCP, LSD and ecstasy and put them together, that’s what we’re seeing sometimes.”



Yeah... great stuff!!



Sympathomimetics

- Epinephrine
- Ephedrine
 - Herbal ecstasy, Ephedra, Cloud Nine, XTC, Mah Huang
 - “Garage chemists” are producing it from Pseudoephedrine (Sudafed®)
- Phenylephrine
- Phenylproanalamine (Dexatrim®)



Volatile Solvents



Huffing



Huffing

- Glue
- White-out
- Kerosene
- Gasoline
- Several others



Huffing

- Quick high for kids
- Obtain the solvent of interest in a container, open and rapidly inhale repeatedly
 - Hide in a soda pop can... teachers think they are drinking their drink
- Highs last for a few minutes then dissipate
- Effects on the CNS are unknown



Huffing

- Causes of death:
 - Suffocation
 - Asphyxiation
 - Respiratory depression
 - Hepatotoxicity
 - "Sudden Sniffing Death"
 - Heart muscle sensitizes to catecholamines
 - Arrhythmias develop



Benzodiazepines

Flunitrazepam

- Rohypnol, "Roofies", "Wallbangers"
 - 1-2 mg white tablets
 - Not marketed in the USA
 - Brought in from other countries.
 - Onset 30 minutes
 - Duration 2-6 hours
 - Rohypnol + EtOH can lead to respiratory arrest



Flunitrazepam

- “Date Rape” drug
 - Slipped to women
 - Causes profound amnesia
 - Profound disinhibition
 - Likely to wake up sexually assaulted



Flunitrazepam

- Properties
 - Slightly hydrophilic
 - Does not mix well with water-based fluids
 - Disappears nicely into alcohol
- If there is any residue in your drink, do not consume it!



Quaaludes

Quaaludes

- Methaqualone
 - Trade name comes from “Quiet Interlude”
- Sedative-hypnotic CNS depressant
 - Originally used for insomnia
 - Discontinued in USA in 1985

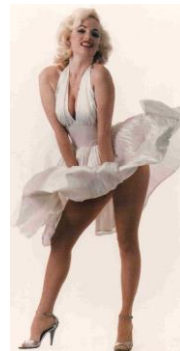


Quaaludes

- Effects:
 - Drowsiness, paresthesias, relaxation
- Often combined with EtOH and cannabis
- Not common in USA; more in South America



Barbiturates



Barbiturates

- Not that common to see used anymore
- Primarily Nembutal and Seconal
- Phenobarbital does not have sufficient acute effect to be of interest
- Can kill by opening the GABA receptor *by themselves*



Tobacco



Tobacco

- Perhaps the most addictive drug of all
- Nicotine is well known for causing physical dependence and addictive “drug seeking” behavior



Tobacco

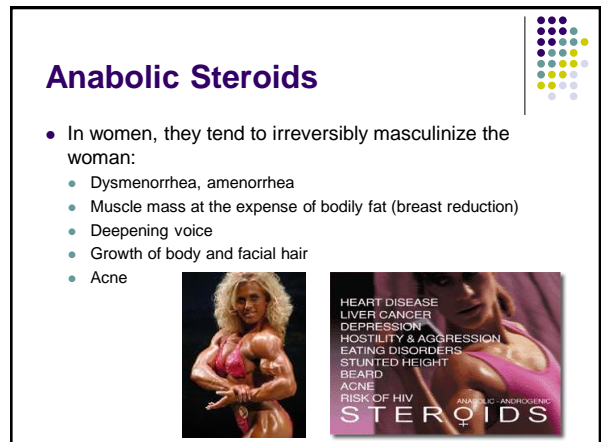
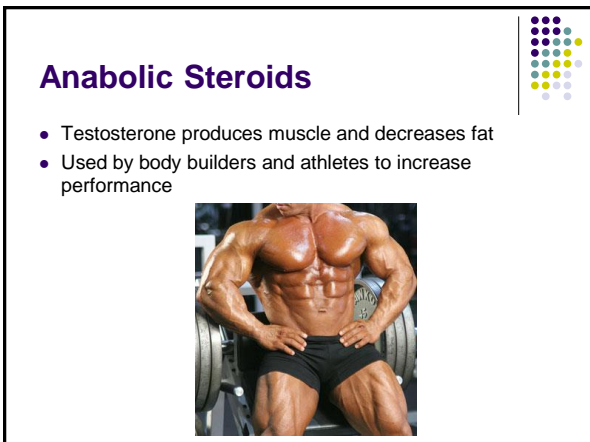
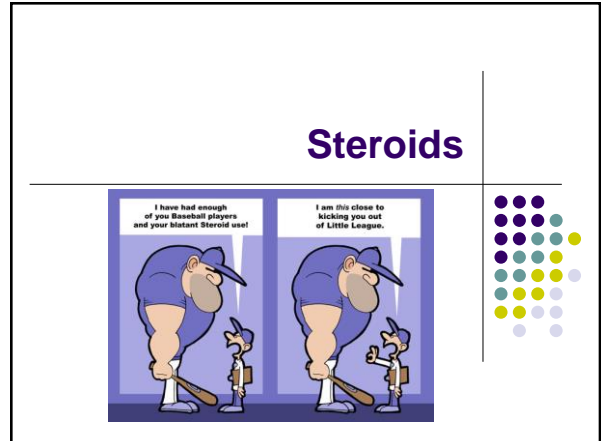
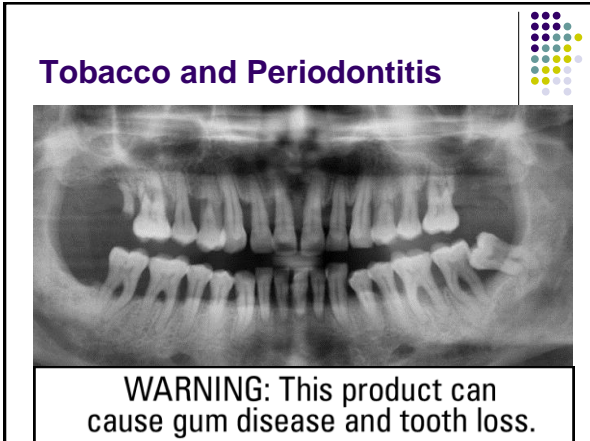
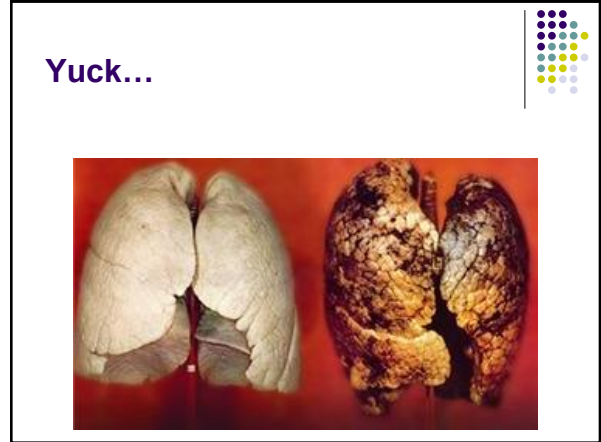
- Much research is occurring to determine just what the addictive effects really are
- A classic “gateway” drug for more street drug abuse



Emphysema

- Almost always from smoking!





Anabolic Steroids

- In the men, it causes more aggressive behavior – “Roid rage”

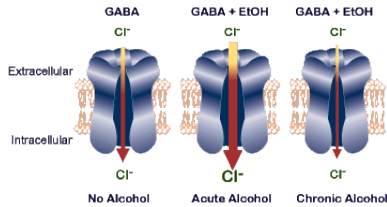


Alcohol



Alcohol

- Works as a pan-CNS depressant.
- GABA receptors are depressed (inhibitory neurons) = Disinhibition



Alcohol

- 1 in 2 teens drank alcohol in the last year
- Teenage Binge Drinking is common



Alcohol

- Analgesic properties: drunk parent cannot feel how hard they are spanking/hitting their children, so they hit harder = beating



Alcohol

- Definite differences exist in how females handle alcohol vs. males:

- Females:
 - Less alcohol dehydrogenase, so harder to break the ethanol down
 - More estrogen = more body fat = less water = more EtOH in the blood



Drinking and Driving

Alcohol

- Alcohol decreases serotonin, so therefore it increases depression

Alcohol

- Blood levels:
 - Legal limit is 80 µg/dL
 - at around 100 µg/dL, you get euphoria
 - at around 200 µg/dL, you get excitement due to disinhibition
 - at around 250 µg/dL, you get confusion
 - at around 300 µg/dL, you get stupor
 - at around 400 µg/dL, you get coma
 - at around 500 µg/dL, you get death
- Age dependent: at age 16, toxic poisoning occurs at 350 µg/dL; at age 21 it is around 500 µg/dL

Alcohol

- “Rum fits”: seizures induced by withdrawal from chronic alcohol effect
- As the depressed nerves come back, aberrant convulsive activity can occur

A Different Drinking Problem...

Caffeine

Caffeine

- America's sweetheart" is everywhere
- 400 – 500 mg per day x 14 days will give physical dependence
 - 4 oz coffee = 100-150 mg
 - 12 oz Coke = 54 mg
 - 12 oz Surge/Jolt cola = 72 mg
 - = Max allowable per 12 oz by FDA
 - = Why 20 oz versions of soda pop are marketed!



Caffeine

- Caffeine stimulation all day causes:
 - Deeper sleep
 - Less REM sleep
 - Therefore waking up feeling tired
 - ... so folks reach for more Caffeine!



Caffeine

- Withdrawal:
 - Vasodilation
 - Migraines
 - Arrhythmias

Caffeine is highly addictive with miserable withdrawal symptoms



Vasodilators



Nitrites

- Amyl Nitrite
- Potent Vasodilator
- Rush from sudden hypotension
- Said to be an aphrodisiac



Nitrous Oxide

- Self-administration, particularly among health care workers
- Aerosol propellant in hair spray, whip cream containers, Whip-its
 - Nitrous parties
- Asphyxia potential



Nitrous Oxide

- How Abused:
 - Friends gather around, put a large trash bag over them
 - Open up a Whiplt
 - Huff until they laugh and fall over
- Alternative is balloons



Some Unusual Drugs...

Khat

- Uncommon / rare / boutique drug
 - Catha Edulis
 - A moderate alkaloid stimulant
 - From East Africa and the Arabian Peninsula



Kratom

- *Mitragyna speciosa*
 - Tropical tree in the coffee family
 - SE Asia and Indochina; indigenous to Thailand



Kratom

- Mu opioid receptor agonist
 - Used for chronic pain and recreational use
 - Not detected by typical opioid screening tests
 - Metabolites can be found with specialized testing
 - Usually does not cause respiratory depression like most narcotics



Kratom

- Thailand: 10-60 leaves are chewed daily to uplift mood and treat health problems
- USA: bought as a non-standardized plant extract
- Potency can vary
- Risk of overdose



kratom capsules

Betel Nut

- Paan = quid pouch
 - Betel leaf
 - Areca nut
 - Slaked Lime
 - Spices/seasonings
 - Often tobacco is added
- Strongly carcinogenic!



Betel Nut

- Arecoline
 - Partial agonist of Ach muscarinic receptors = parasympathetic effects
- Mild stimulant
- Saliva stains very red
- Traditional Ayurvedic medicine for halitosis



A Dangerous Method of Ingesting Drugs

Parachuting

- Dangerous way to administer drugs
- Toilet paper and ground up drug



Drugs and Pregnancy



Narcotics and Pregnancy

- Not great, of course, but remarkably not too bad
- Many Heroin babies do okay with medical care to manage neonatal withdrawal



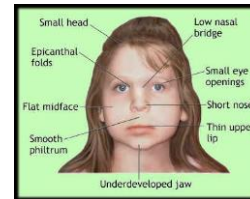
Cocaine and Pregnancy

- Slows fetal growth
 - Smaller birth weight
 - Smaller heads
- Little long-term consequences
 - They catch up over time
- More social issues than physical



Alcohol and Pregnancy

- Fetal Alcohol Syndrome



When you drink alcohol, your unborn child drinks it, too

FAS

- Poor growth
- Decreased muscle tone and coordination
- Delayed development
 - Significant functional problems
 - Speech
 - Thinking
 - Movement
 - Social skills

Benzodiazepines

- Most are category D or X
- Should not be used in pregnancy



Deaths from Drugs

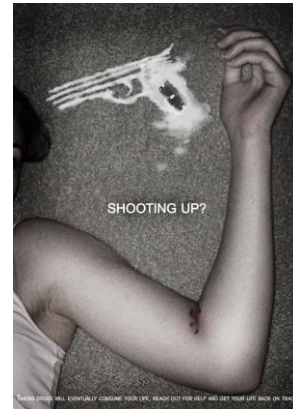


Philip Seymour Hoffman

- Found dead Feb 2, 2014 with a syringe in his left arm
- Died of "acute mixed drug intoxication"
 - Heroin, cocaine, amphetamine and benzodiazepines per the NY ME's office.
- "The manner of death was ruled an accident"



Suzy's Story



Suicide

- Many times the patient feels there is no escape
- Notes often talk of:
 - Being trapped
 - No hope
 - No help



Suicide is a permanent solution to a temporary problem



Suicide

- Many times the patient does not intend suicide
 - Overdose
 - Accidental death while high



Homicide

- Addicts lose control, can hurt or kill others



Getting Help



Websites to Browse



- Alcoholics Anonymous www.aa.org
- Narcotics Anonymous www.na.org
- Cocaine Anonymous www.ca.org
- Recovery Connection www.recoveryconnection.org
- For the families:
 - Al-Anon / Alateen www.al-anon.alateen.org
 - Nar-Anon www.nar-anon.org

Alcohol Cessation



Alcoholics Anonymous



- Key is not to seek “cure”, but to recognize sobriety and recovery
- Encouraged to stay away from a drink “one day at a time”
- 12 Steps “suggest ideas and actions that can guide alcoholics toward happy and useful lives”



Alcoholics Anonymous



- History:
 - Started in 1935 by a NY Stockbroker and an Ohio Surgeon
 - Both were “hopeless drunks”
 - Most early member’s alcoholism sent them to hospitals, sanitariums, or jail
 - Has now spread to 180 countries



Alcoholics Anonymous



- Structure:
 - Open meetings: Alcoholics and friends/family
 - Closed meetings: Alcoholics only
 - 1-2 times per week
- Free to all members
 - Completely self-funded
 - No grants/ governmental money



Alcoholics Anonymous



- No membership list kept
 - Membership estimated >2,000,000
- No recruiting
 - Only for alcoholics who *want* to get sober
- Not affiliated with any religious organization
 - Members encouraged to follow their own beliefs



Alcoholics Anonymous

- The Twelve Steps:
 1. Admit alcohol has made our life unmanageable
 2. Believe a greater power can restore us to sanity
 3. Turn our will and our lives over to the care of "God"
 4. Make a moral inventory of ourselves
 5. Admit the exact nature of our wrongs
 6. Be ready to remove these defects of character
 7. Humbly ask "God" to help remove our short-comings



Alcoholics Anonymous

- The Twelve Steps:
 8. List people we have hurt; be willing to make amends
 9. Make amends to those people wherever possible, except when doing so causes harm
 10. Continue to take personal inventory and admit when we are wrong
 11. Seek to improve our conscious contact with "God"
 12. Try to carry this message to other alcoholics, and to practice these principles in our daily affairs

Alcohol Programs: Families

- Al-Anon
 - Mutual-support peers who have experience with problems related to a problem drinker in their lives
 - It is not group therapy
 - Not led by a counselor or therapist
 - Network that complements and supports professional treatment
 - Considers alcoholism a family disease



Alcohol Programs: Families

- Alateen
 - Peer support group for teens who are struggling with the effects of someone else's problem drinking
 - Open only to teenagers



Drug Cessation

Recovery Connection

- A clearinghouse website for many different Substance Abuse organizations
- Good summary of the larger organizations available to help



Narcotics Anonymous

- A 12-Step program patterned after AA
- "Our vision is that every addict in the world has the chance to experience our message in his or her own language and culture and find the opportunity for a new way of life"



Cocaine Anonymous

- Similar to AA and NA
- Primary purpose is to help other cocaine addicts achieve recovery



Narcotics Programs: Families

- Nar-Anon
 - Designed to help relatives and friends of addicts recover from the effects of living with an addicted relative or friend
 - Only requirement for membership is that there be a problem of addiction in a relative or friend
 - Based upon the 12-Step program and 12 Traditions

Impaired Dentists and the Law

New York Law Summary

New York State Education § 6530 Definitions of Professional Misconduct

§ 6530. Definitions of professional misconduct. Each of the following is professional misconduct, and any licensee found guilty of such misconduct under the procedures prescribed in section two hundred thirty of the public health law shall be subject to penalties as prescribed in section two hundred thirty-a of the public health law except that the charges may be dismissed in the interest of justice:

7. Practicing the profession while impaired by alcohol, drugs, physical disability, or mental disability;
8. Being a habitual abuser of alcohol, narcotics, barbiturates, amphetamines, hallucinogens, or other drugs having similar effects, except for a licensee who is maintained on an approved therapeutic regimen which does not impair the ability to practice.

Tobacco Cessation

Benefits of Quitting

Time after quitting	Benefits
20 minutes	Heart rate drops
8 hours	CO levels drop, O ₂ levels rise
24 hours	Heart attack risk decreases
48 hours	Ability to smell and taste is enhanced
2 – 12 weeks	Heart attack risk drops, lung fxn and circulation improve
1-9 months	Coughing, sinusitis, fatigue, SOB all decrease
1 year	Risk of coronary disease is half that of a current smoker
5 – 15 years	Added risk of stroke is reduced to a non-smoker's
10 years	Lung CA risk is half that of a current smoker
15 years	Risk of CAD equals a non-smoker Risk of death returns to the level of people who never smoked

Role of the Dentist / Hygienist

- Ask your patients about tobacco usage
 - Cigarettes
 - Cigars
 - Snuff/Dip/Chew
 - Nicotine Patches
- Establish amounts, duration
 - Usually expressed in Pack Years

Role of the Dentist / Hygienist

- Tell them about the oral problems with tobacco:
 - Cancer
 - Periodontal Disease
 - Tooth loss
 - Halitosis Maximosis
 - Stains
 - Laryngeal / Voice changes

Role of the Dentist / Hygienist

- Then simply ask, "*Are you ready to quit yet?*"
 - If the answer is yes, refer for help
 - If the answer is no, encourage them to keep thinking about it. Tell them you will ask again the next time they come in. Then do it!

Chantix (Varenicline)

- Selectively binds the $\alpha 4\beta 2$ Nicotinic Ach receptor
 - Provides agonist activity
 - Agonist activity is lower than Nicotine
 - Simultaneously blocks Nicotine binding
- Also moderately binds the Serotonin receptors
- 0.5 mg (White) and 1.0 mg (Blue) tablets

Chantix (Varenicline)

- Usual Regimen:
 - Choose a quit date
 - Take Chantix 1 week prior; okay to smoke
 - 0.5 mg qd days 1 – 3
 - 0.5 mg bid days 4 – 7
 - 1.0 mg bid days 8 – end of tx
 - Pt stops smoking on the quit date
 - Most people need Chantix for up to 12 weeks

Chantix (Varenicline)

WARNING: May cause abnormal psychiatric symptoms

- Suicidal ideation
- Depression
- Anxiety, Panic
- Agitation
- Aggression, Anger, Violence
- Abnormal thoughts/sensations
- Acting upon dangerous impulses
- Mania
- Hallucinations
- Paranoia
- Confusion
- Other unusual behaviors/moods

National Resources

- American Lung Assn – Online program
 - <http://www.lungusa.org/stop-smoking>
- Nicotine Anonymous
 - <http://www.nicotine-anonymous.org>
- Quit-For-Life Program (Am Cancer Soc)
 - <http://www.quitnow.net>

Other Resources

- WA Chapter of Am Lung Assn
 - http://www.alaw.org/tobacco_control/quit_smoking_today/
 - 1-800-732-9339
- Other States will have similar Chapters and access points

Drug Courts

Drug Court

- What is it?
 - Eligible drug addicts can be sent to Drug Court instead of the traditional justice system
 - Drug Courts provide treatment and supervision, allowing patients to work
- <http://www.nadcp.org>
- Started in 1989 in Miami-Dade Cty, FL
- Now over 2000 drug courts, and in every State

• Thanks to Sara Cassidy DDS for this info!

Drug Court

- Minimum term is one year
- Intensive treatment
- Must get and stay clean/sober
- Pt. held accountable for meeting obligations to:
 - Judge and Court
 - Society
 - Family
 - Themselves



Drug Court



- Randomly tested for drug use
- Must appear in court frequently so the judge can review their progress
- Rewarded for doing well
or
- Sanctioned when they fail their obligations

Drug Court



- Most do not consider violent offenders
- Most will consider drug and drug-driven offenses
- Where offenses involve victims, consent of the victim and payment of restitution is typically mandatory

Drug Courts are Successful!



- 75% of Drug Court graduates remain arrest-free at least two years after leaving the program
- Long-term outcomes demonstrate reductions in crime >3 years and can endure for >14 years
- Rigorous meta-analyses conclude Drug Courts reduce crime as much as 35% more than other sentencing options

Drug Courts Save Money



- For every \$1.00 invested in Drug Court, taxpayers avoid as much as \$3.36 in criminal justice costs
- Drug Courts produce cost savings ranging from \$4,000 to \$12,000 per client
 - Reduced prison costs
 - Reduced revolving-door arrests and trials
 - Reduced victimization

Drug Courts Foster Compliance



- 70% of substance abusing/addicted offenders drop out of treatment prematurely if not regularly supervised by a judge and held accountable
- Drug Courts are 6x more likely to keep offenders in treatment long enough for them to get better

Drug Courts Support Families



- Parents in Family Drug Court are more likely to go to treatment and complete it
- Children of Family Drug Court participants spend significantly less time in foster/out-of-home placements
- Family re-unification rates are 50% higher for Family Drug Court participants.

Types of Drug Courts

- Adult Drug Court
- Veterans Treatment Court - the Newest Model
- DWI Court
- Family Drug Court
- Federal Reentry Court
- Juvenile Drug Court
- Tribal Healing to Wellness Court
- Back on TRAC: Treatment, Responsibility, Accountability on Campus

Dental Considerations



Questions to ask

- Do you smoke or use any tobacco products at all (including cigars and snuff)?
- Do you use alcohol; if so, how much, how often?
- Do you have a history of chemical dependency?



Questions to ask

- Have you ever used any kind of street drug?
- If so:
 - What was/were the drug(s)?
 - How often did/do you use them?
 - How did/do you take them (snort, smoke, inject, huff, etc.)?
 - When was the last time you had any drug, and what was it?
 - *Specifically ask:* Have you used Cocaine, Meth, Ecstasy within the last 24 hours?

Rendering Dental Care

- All patients suspected of being on drugs:
 - Evaluate patient
 - General presentation
 - Are they sweating and in a tank top/shorts in February?
 - Are they communicative?
 - Are they helpful vs. out of control vs. unreachable?
 - Are they dangerous?
 - To themselves (suicide, other harm)
 - To others (especially you and your staff)
 - Take vital signs if possible

Rendering Dental Care

- All patients suspected of being on drugs:
 - What stance do you take?
 - Defense (Call 9-1-1, ask for Police / Fire Dept) vs.
 - Nurturing (Take care of them, help them find help)
 - Protect yourself, your staff and your patients first
 - Do not be a hero!

Rendering Dental Care

- Patients currently using:
Danger zones!!
- Stimulants + Stress, Epi, Pain
 - (Does Dentistry ever encounter these??) ☺
 - Ideally clean for 24 hours prior to dental care
 - TAKE VITAL SIGNS
 - Abort appointment if unstable



Rendering Dental Care

- Patients currently using:
Danger zones!!
- Depressants + Sedation
 - May have synergistic effect
 - Suggest same 24-hour buffer
 - Vital signs, including oxygen saturation



Rendering Dental Care

- Patients not using, but past history:
 - Talk openly about their history
 - What used, how severe, rehab experience, timelines, etc.
 - Get the story! Fascinating to hear their views of what the drugs did for them and to them



Rendering Dental Care

- Patients not using, but past history:
 - Any lingering sequelae:
 - Ongoing maintenance therapy
 - What they can vs. can no longer do
 - Heart / Liver / other organ system issues
 - Metabolism changes
 - Chronic pain
 - Psych status
 - Paranoia, delusions, control, etc.



Rendering Dental Care

- Patients not using, but past history:
 - May need to talk to:
 - Rehab counselor
 - Pain management clinic
 - Psychiatrist
 - Court system



Rendering Dental Care

- Sedation
 - "Experienced" physiologies often require massive amounts of sedatives to have effect
 - GA may be necessary
 - You must determine your comfort zone and stay safely under it



Rendering Dental Care

- Post-op pain control
 - Check with rehab/psychiatrist in advance
 - Ibuprofen is our workhorse
 - Most of the time short-term (+/- 4 days) narcotics can be permissible
 - Many recovering addicts decline them regardless



Rendering Dental Care

- Post-op pain control
 - Must have clear agreements on:
 - Usage
 - Medications
 - Dose
 - Amount dispensed
 - Schedule
 - May employ others to hold the meds and dispense them when appropriate



Methadone

- General Info:
 - Replacement therapy
 - It is a narcotic
 - High oral efficacy and persistence
- Dental Use:
 - None
 - Consult MDs if patient is on Methadone
 - Do you layer your analgesic over it?
 - Do you let the Methadone do the job?
 - Do you increase the Methadone dose?

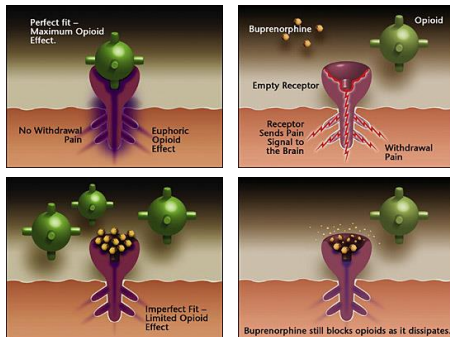


Buprenorphine

- Binds mu receptor vigorously
- Some kappa receptor antagonism
- Slowly pushing methadone out
- Suboxone:
 - Buprenorphine + 25% naloxone
 - Used for replacement therapy



Buprenorphine



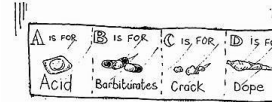
Closing Information



Prevention is Best



Guiding your Kids



© Original Artist
Reproduction rights obtainable from
www.CartoonStock.com



Guiding your Kids

- Be aware
- Monitor them
 - For problems
 - As a deterrent
- Most of all: Keep lines of communication open
 - EDUCATE
 - ESTABLISH TRUST



Steps you can easily do

- Lock your liquor
 - Clear alcohol is easy to replace with water
- Trust, but double check
 - Do their stories make sense?
- Add tracking apps to their phones
 - Where are they really?



Steps you can easily do

- Check their bedrooms
 - Under mattress
 - Under dressers or taped to the back of drawers
 - Inside pockets of clothes
 - Soda cans
 - Homemade
 - Professional
- Let them know you do this



Steps you can easily do

- Be aware of common ways drugs are concealed:
 - Pez dispensers
 - Certs rolls... in the holes
 - Tic Tac dispensers
 - Packs of gum
 - Blotting paper
 - Tootsie rolls
 - Soften in microwave, push in pencil, place tablet inside, close it up, re-wrap



Secret Compartments



Steps you can easily do

- Look at your child
 - Eye contact? Do they look right?
 - Appropriate clothes for the weather?
 - Conversation appropriate to baseline?



Steps you can easily do

- Don't be naïve
 - Know your kid's friends and their parents
 - Check their car after a date
 - Presume they have pressures to try drugs

**My kid sells drugs to
your honor roll kid.**

Steps you can easily do

- Give your kids a random drug test
 - During or after the weekend
 - Just having the kit nearby is a wonderful deterrent



Talk to your kids about drugs!

- Start talking early
 - Age 6-7 is a good time to say "Drugs are bad"
 - Revisit often
 - Show openness for questions and curiosity



Talk to your kids about drugs!

- Start talking early
 - Age 9-11 is a good time to talk openly about different kinds of drugs and some pressures that may come with puberty and middle school



Talk to your kids about drugs!

- Start talking early
 - By age 12, many kids have experimented
 - Don't be naive!



“The Party” Story

- One of my son's friends thought it would be fun to have a party at his house
- For some odd reason, he selected a weekend when his Mom was out of country and his Dad was in another state on business



“The Party” Story

- Preparation:
 - Entire grade invited – but told to keep it quiet
 - “Going to my friend's” stories were passed to parents
 - None of the parents realized what was going on
 - Several kids helped move valuable vases
 - They took photos to be able to exactly reconstruct the pre-party scene



“The Party” Story

- Copious ethanol showed up
- Funny smells were detected in the backyard
- Several kids were having sexual relations



“The Party” Story

- Several kids got really scared
- Some kids got so drunk that other kids had to keep them awake
- Ample vomit needed cleaning up
- Remarkably, the Police were not called



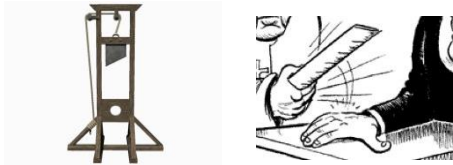
The Aftermath

- Parents quickly found out the real story
- “A's” Mom called me from overseas... very upset
- We all interrogated the main ringleaders



The Aftermath

- All parents of all kids were informed of the events
- Each family handled their child's punishment in their respective ways



The Aftermath

- "A's" punishment:
 - No cell phone for three months
 - No friends for three months
 - No car for three months
 - Dad went to his restaurateur friend and got "A" a dishwashing job



The Aftermath

- Several parents met with the kids:
 - Discussed how much (little) is 1 oz of EtOH
 - Discussed sentinel events:
 - Potential for DUI / other legal issues
 - Potential for aspiration
 - Potential for unwanted pregnancy / STDs
 - Potential for death
 - Potential for lawsuits to the "host" family



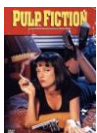
In the end...

- Everyone was lucky:
 - No permanent harm
 - No legal issues
 - Good educational opportunity
- ... but it could have been MUCH worse



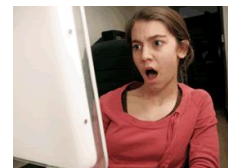
Talk to your kids about drugs!

- Use the Media as a springboard
 - Kids see drugs/ tobacco/ alcohol all the time in the movie and television industry
 - Talk about the difference between funny or "cool" and reality



Talk to your kids about drugs!

- Monitor your kids
 - Ask your kids about their friends
 - Call their cell phone during the party
 - Know about their FaceBook
 - Consider parental controls
- Kids who know they are monitored are 4x less likely to try drugs



Talk to your kids about drugs!

- TimeToTalk
 - www.timetotalk.org
 - Sponsored by The Partnership at Drugfree.org
 - Nice resource for parents to access information, get "Talk Kits" and link to other resources



Good Rules to Live By

- In their teenage years, talk openly about:
 - Drugs
 - Peer pressure
 - Friends who are experimenting
 - Why doing drugs is not smart
 - It is okay to say "No thanks"
- *Good parental communication is the strongest deterrent to gateway drugs!*



What about you?

Good Rules to Live By

- Don't drink anything you didn't open
- Don't ever leave your drink alone
- Don't drink anyone else's drink
- Don't drink anything that:
 - Tastes funny
 - Has salty taste
 - Residue in it
 - Foamy



Good Rules to Live By

- If drugs are in use by others, leave!
 - Keeps you from getting into trouble:
 - With the drugs themselves
 - With the police if the place gets raided
 - And from getting hurt if things get out of control!



Good Rules to Live By

- Remember:
 - Drugs affect the brain
 - We do not understand much about this at all, let alone the fine details
 - Street drugs are not pharmaceutically prepared
 - Purity, Potency, Quality control
- They are NOT innocuous!

Ultimately, Drug use is a choice... make the right one



Questions?



Thank you!

Bart Johnson
bartj@sscdentistry.com
www.seattlespecialcaredentistry.com
206-524-1600

