Substance Abuse: Illegal and Prescription

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Learning Objectives

- Learn how drugs are made, distributed, used, and abused
- Understand the pathophysiology of drug use and the subsequent pathophysiology of withdrawal from those drugs
- How to recognize signs of drug use and abuse in your patients

Learning Objectives

- Recognize the difference between:
Illegal and Legal Drugs

- Meth
- Heroin
- Cocaine
- Bath Salts
- Spice
- Paint
- Alcohol
- Prescription Narc's
- Benzo's
- Tx for wt loss & ADD
- Anti-depressants

Crystal Meth

Meth Facts

- Aka- crank, glass, G, speed, tweak, crystal, ice
- Stimulant
- High lasts 2-14hrs, UDS+ x1-3d, both depend on route/frequency of use
- Smoke, snort, shoot, eat, rectal
- 36% of inmates in Maricopa have been using meth, #1 illegal drug in our system
Meth Facts

- 80% made in super labs in Mexico, then brought across the border, creating more users in border states
- Remaining in smaller home made labs typically in more rural areas
- Most home makers of meth are also users, so never the same batch twice

Common ingredients for Meth at home

Meth Effects

- Fast, hyper alert, confident
- Dilated pupils
- ↑Temp
- Peripheral vasodilation
- Tachycardia
- ↑BP
- ↑Dopamine
- Tunnel vision
- ↓Urinary/GI output
- ↓Appetite
- ↓Menses/Sperm
- Removal of nutrient stores (fat & glucose)
- Dry mouth
- Poor hygiene
- Paranoia
### Meth Effects

<table>
<thead>
<tr>
<th>Stimulates dopamine receptors</th>
<th>Mimics sympathetic nervous system vs.</th>
<th>Activates pleasure centers of brain, causes happiness, euphoria, CP, SOB, palpitations, diaphoresis, constant motion, high energy, rapid pressured speech, pupils dilated, parkinson-like tremor, spastic involuntary movements, lack of pleasure.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawal Causes ↓ dopamine</td>
<td></td>
<td>Parkinson-like tremor, spastic involuntary movements, lack of pleasure.</td>
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</table>

### Meth Effects

<table>
<thead>
<tr>
<th>↓GI/appetite/menses</th>
<th>Peripheral vasodilation</th>
<th>Low blood sugar and dry mouth</th>
<th>Skin Picking</th>
</tr>
</thead>
<tbody>
<tr>
<td>↓Hygiene/tunnel vision</td>
<td>Know how to feel dirty, disheveled, acne, poor nutrition, fat loss.</td>
<td>Feeling of bugs crawling on skin → skin picking.</td>
<td>Eating high sugar foods &amp; caffeinated drinks.</td>
</tr>
</tbody>
</table>
Meth Mouth

- Multifactorial:
  - Route of use: snorting causes damage to maxillary artery, smoking pipe causes enamel destruction
  - Consumption of high sugar foods/drinks, especially when coming down from the high.
  - Poor hygiene: Not brushing teeth... at all

Meth Mouth

- Fatigue/excess sleep
- Myalgias
- GI upset
- Irreg menses
- 2° skin infections
- Dental infections
- Rhabdomyolysis
- Very low pain tolerance

Meth Withdrawal

- Cardiomyopathy
- Parkinsonian like dz
- Kidney failure
- Brain, liver, nerve damage
- Poor skin integrity
- Lowered immune system
- Psychosis (schizophrenia like)

Long Term Effects
Meth Addiction

• With all these wonderful side effects and damage, why is the lifetime recidivism rate >90%??
• Separate from other drugs, people LIKE who they are on meth. They believe they are better employees, parents, children; smarter, more focused, skinnier, get more done in less time. All true... temporarily
• Meth addicts only feel happy when they are using due to the cycle of dopamine stimulant and w/d

Muppet Syndrome

Heroin
Heroin Facts

- Aka: black tar, china white, horse, smack, H, mud, Mexican mud
- Depressant
- High lasts 2-8hrs, UDS+ x1-4days
- IV most common (by far), or smoke, rare snort
- 1.6% population have tried it, 23% in nationwide prisons
- 90% of users started on Rx narc's
- If the trend con't, by 2020, 20% of Arizonans will be addicted to heroin (!)

Heroin Facts

- Taken as derivative of morphine that comes from the "gum" of poppy pods
- Multi-chemical process that breaks down morphine to heroin and forms into bricks
- Bricks of heroin are 90% pure, dilute to 40% (white)
- Arizona has black tar heroin from Mexico, 20% pure, a cheaper form. Diluted with shoe polish, gives color, chemical high and consistency. Smells like vinegar

Black Tar

China White

2/29/2016
Heroin Effects and Symptoms

- Acts on limbic system, brain stem and pleasure centers
- Slows down EVERYTHING; Mellow, goes to sleep, "the nod"
- Mu receptors in the brain → causes pinpoint pupils, ↓BP, HR, RR

Heroin Effects

<table>
<thead>
<tr>
<th>Effect</th>
<th>Symptom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry Mouth</td>
<td>Users have ice or water nearby for use after shooting up</td>
</tr>
<tr>
<td>Capillary dilation</td>
<td>Skin flushing, can also lead to picking</td>
</tr>
<tr>
<td>Blocks pain receptors</td>
<td>Makes opioids such a powerful addiction, FEELS no pain, although pain still exists</td>
</tr>
<tr>
<td>↓Bowel activity</td>
<td>Constipation, reason codeine is given as an anti-diarrheal</td>
</tr>
</tbody>
</table>

Heroin Withdrawal

- Onset 12-24hrs after last hit for regular users
- Worst flu x5d
- Myalgias, arthralgias
- Hot/cold sweats, rigors, piloerection
- Violent n/v/d
- Excess salivation, runny nose and eyes
- Pregnant pt's have high risk of SAB from fetal w/d. Ideally a methadone taper is started
Long Term Effects of Heroin

- Most are due to IVDU as opposed to the drug itself
  - Dirty or shared needles
  - Poor skin prep
  - Repeated "hitting of same area"
- Skin sclerosing, poor skin integrity and healing
- Multiple abscesses typically caused by MRSA

Long Term Effects of Heroin

- Staining of the skin from black tar, giving a perpetually "bruised" appearance
Long term Effects of Heroin

- Smoking black tar can cause staining in the mouth as much as on the skin

Long Term Effects of Heroin

- Endocarditis, also caused by staph, leads to heart valve replacement
- Hep B, C and HIV from sharing needles
- Overdose: this is what most addicts die from, we treat with Narcan, which temporarily blocks the opioid
- However, the heroin lasts 4-6hrs and the Narcan only 45-60min, so guess what happens when the Narcan wears off?

Heroin Addiction Treatment

- Methadone programs: Controversial in medicine. The clinics consider addiction a disease requiring lifetime medication to treat like DM or HTN
- Methadone withdrawal isn’t as intense as heroin, but symptoms can last weeks, has the benefit of being able to taper down
- Does any of this work??
Biggest and most important long term effect of Drug Abuse is:

Troll Syndrome

Troll Syndrome

Alcohol Abuse
Alcohol Facts

- 12oz Beer = 6oz wine = 1.5oz shot of hard liquor
- Intoxication occurs gradually with consumption
- The liver metabolizes 0.5-1.0 oz of alcohol per 90min. The amount of fat stores, gender, and weight all affect how quickly a person sovers up
- Rates are on the decline
- 22% of Police activity involves alcohol
- 40% of inmates are serving time for alcohol related offenses

Underage consumption

- People who begin drinking before age 15 are 4x more likely to develop alcoholism than those who begin in their 20’s

Drugs vs Alcohol in the Workplace
Absorption occurs in the stomach:
- GABA receptor stimulation
- BP, HR

Liquid courage and beer goggles too much causes vomiting:
- increased blood flow to skin, heat loss and facial flushing
- attention span, fine motor skills and coordination
- impaired judgment, blurred vision, lowered inhibitions

Chronic Alcoholism Effects:
- Skipping the sleep cycle → the brain is unable to process input
- Unconscious vomiting → ↑ risk of choking, aspiration and pneumonia
- Hypercoagulable state increases bleeding & bruising
- Destruction of stomach lining leads to esophageal varices
- Chronic thiamine deficiency causes Wernicke-Korsakoff
- And the big one: CIRRHOSIS

Liver Damage:
- Alcohol-induced liver disease is a major cause of illness and death in the US, can be reversible
CIRRHOSIS

Chronic Alcoholism Effects
- Rosacea exacerbated by alcohol use

Long term Effects of Alcoholism
- Cardiomyopathy
- Pancreatitis
- Hepatic Encephalopathy
- Dementia
- Stroke
- PAD/PND
- Permanent tremor
- Mental Health Issues
- ARDS
- Sexual Dysfunction
- Cirrhosis → Liver CA
Alcohol Withdrawal

- Abrupt cessation of alcohol causes a hyper-excitability state in the brain and its neurotransmitters, causing:
  - Tremor
  - Fasciculations
  - Audio/visual/tactile hallucinations
  - Sleep disturbances
  - Tachycardia
  - HTN
  - Agitation/confusion
  - Seizures

Alcohol Treatments: Withdrawal and long term

- In jail we use CIWA scoring to track symptom progression and determine need for meds
- Benzo's are the treatment of choice: Librium taper and Ativan prn are the most common,
- Once a patient begins having hallucinations or disorientation, they are at a very high risk for seizures
- In the community, 12 step programs have the highest success rate... at 5%
Prescription Medication

- The new up and comer in addiction, fastest growing drug problem in the US
- Opiates (depressant): Percocet, Vicodin, Morphine, Methadone, Dilaudid
- Benzodiazepines (sedative): Xanax, Ativan, Klonopin
- ADD meds (stimulant): Ritalin, Adderall, Concerta
- Diet meds (stimulant): Dexedrine, Phentermine
- Psych meds (crushed & snorted): Wellbutrin, Seroquel
- Benzo-like meds (sedative): Ambien, Sonata, Lunesta

Street Value of Drugs

- Darvocet® 100 mg: $0.50
- Tylenol® #3: $2.3
- Vicodin® 75 mg: $6.8
- Percocet®: $6-8
- Demerol® 100 mg: $10
- Morphine 30 mg: $15
- Dilaudid® 4 mg: $48
- OxyContin®, $5.00 - $10.00 per mg
- Ritalin patch: $1-2 per mg
- Methadone 10 mg: $5-10
- Addax lozenge® 200, 400 mg: $20.00
- Ativan® 1 mg: $2-3
- Xanax® 1 mg: $5-7
- Valium® 10 mg: $4-6
- Serax® 30 mg: $0.50
- Flomax® (tadalafil): $3-5
- Ritalin® 10 mg: $10-12
- Sonata®: $3-4

Prescription Narcotics

- United States uses 80% of the world's opium (mostly pharmaceutical)
- 87% opium is made in Afghanistan from the poppy plants—war anyone?
- #1 Methadone: Rx writing has ↑933% from '97-'05 with #2 Percocet ↑888% in same time period
- Medical providers have been sued for under treatment of pain
- Withdrawal symptoms the same as heroin
Benzodiazepines

- Initially thought to be a miracle treatment for panic/anxiety and insomnia
- Calming, euphoric high, builds tolerance and extremely addictive
- W/D symptom onset 24-48hrs, UDS+ x1-4d, GI upset, salivation, agitation, anxiety and seizure (making them more dangerous than other rx meds)
- Seizures are atypical: shorter duration, little post-ictal phase, usually w/o urinary incontinence or tongue biting
- W/D anxiety symptoms can last up to 12 months!

Benzo’s (aka Xanie bars)

- Drowsiness
- Light-headedness
- Dizziness
- Irritability
- Tachycardia
- Changes in sex drive or ability
- Changes in appetite
- Sleep disturbances
- Memory problems
- Confusion
- Hallucination
- Severe skin rash
- Other
- Weight changes

Side effects of Alprazolam

- Red = more serious
- Yellowing of the skin or eyes
- Dry mouth
- Increased salivation
- Seizures
- Weakness
- Problems with coordination
- Stomach problems

- Other
- Weight changes
Questions

References

- www.azmethproject.org
- www.erowid.com
- www.dea.gov
- MCSO (mug shot of the day)
- National Institute of Drug Abuse
- Wikipedia