



COLLEGE OF
OSTEOPATHIC MEDICINE
at the Cherokee Nation

Caring for Patients with Substance Use Disorder

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Disclosures

- I have nothing to disclose



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Objectives

- Understand the prevalence of Substance Use Disorder and describe the criteria for diagnosis
- Identify key neurotransmitters, brain pathways, and brain structures implicated in addiction and addiction treatment
- Describe evidence-based treatment strategies for commonly mis-used substances





2022

(Nov 2021-Nov 2022)

108,712 Americans Died from Drug Overdose

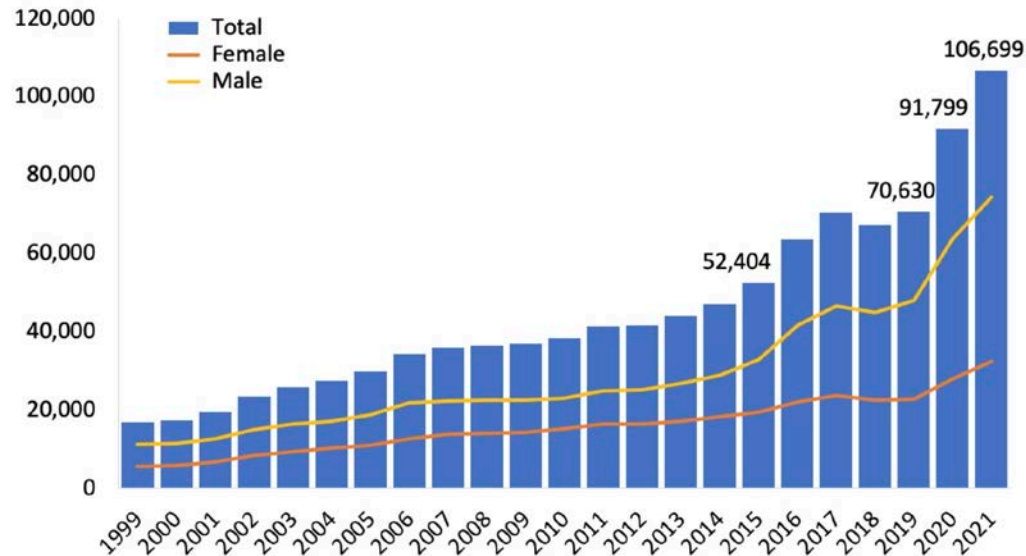
1,060 Oklahomans died from Drug Overdose



Drug Overdose Deaths, in the United States

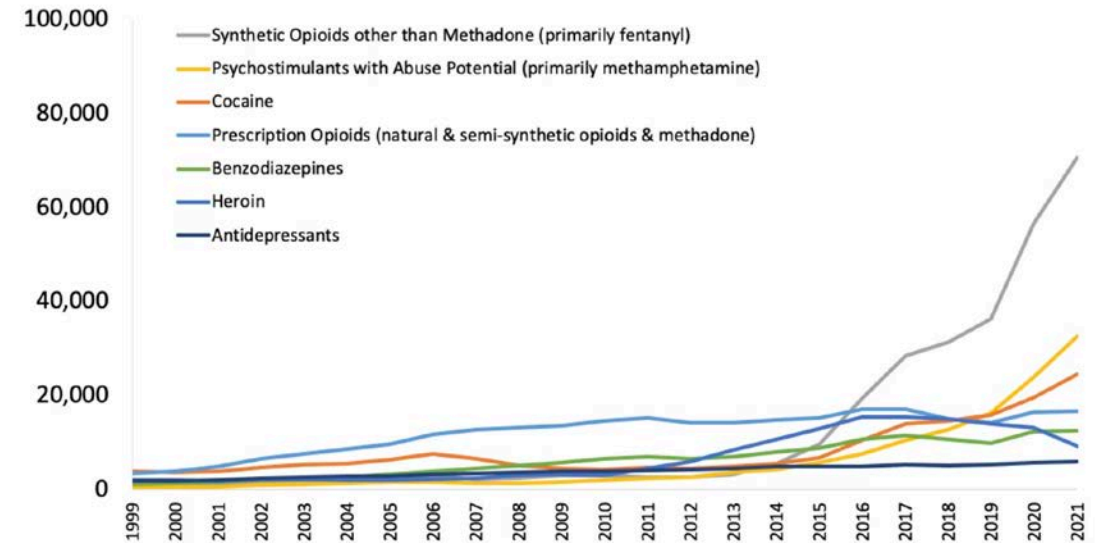
Drug overdose deaths increased from **52,404** in 2015 to **107,622** in 2021

Figure 1. National Drug-Involved Overdose Deaths*, Number Among All Ages, by Gender, 1999-2021



*Includes deaths with underlying causes of unintentional drug poisoning (X40–X44), suicide drug poisoning (X60–X64), homicide drug poisoning (X85), or drug poisoning of undetermined intent (Y10–Y14), as coded in the International Classification of Diseases, 10th Revision. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2021 on CDC WONDER Online Database, released 1/2023.

Figure 2. National Drug-Involved Overdose Deaths*, Number Among All Ages, 1999-2021



*Includes deaths with underlying causes of unintentional drug poisoning (X40–X44), suicide drug poisoning (X60–X64), homicide drug poisoning (X85), or drug poisoning of undetermined intent (Y10–Y14), as coded in the International Classification of Diseases, 10th Revision. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2021 on CDC WONDER Online Database, released 1/2023.

Prevalence of Substance Use, 2019

Age ≥ 12 years

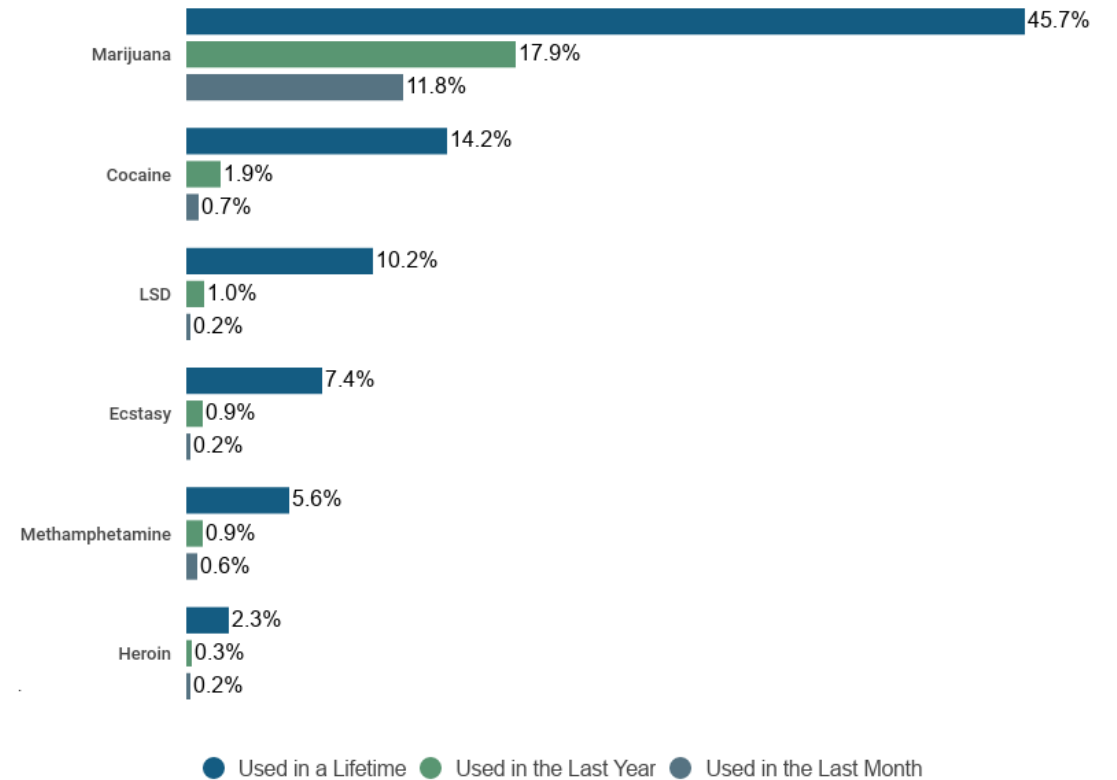
165.4 million (60.1) used a substance in the past month

139.7 million (50.8%) drank alcohol

58.1 million (21.1%) used a tobacco product

45.8 million (13%) used an illicit drug

Drug Usership Among Americans Aged 12 & Older



National Center for Drug Abuse Statistics, data from the Substance Abuse and Mental Health Services Administration 2020 National Survey of Drug Use and Health



Science of Addiction



The Myth of Addiction

“For me the most educational experience of the past three decades was to learn that the traditional image of the addict (weak character, hedonistic, unreliable, depraved, and dangerous) is totally false. This myth, believed by the majority of the medical profession and the general public, has distorted public policy for seventy years.”

- Dr. Vincent P. Dole



Addiction

- A **treatable, chronic medical disease** involving complex interactions among brain circuits, genetics, the environment, and an individual's life experiences.
- People with addiction use substances or engage in behaviors that become **compulsive** and often continue **despite harmful consequences**.

DSM V Criteria: Substance Use Disorder

Severity:

0-1: No diagnosis

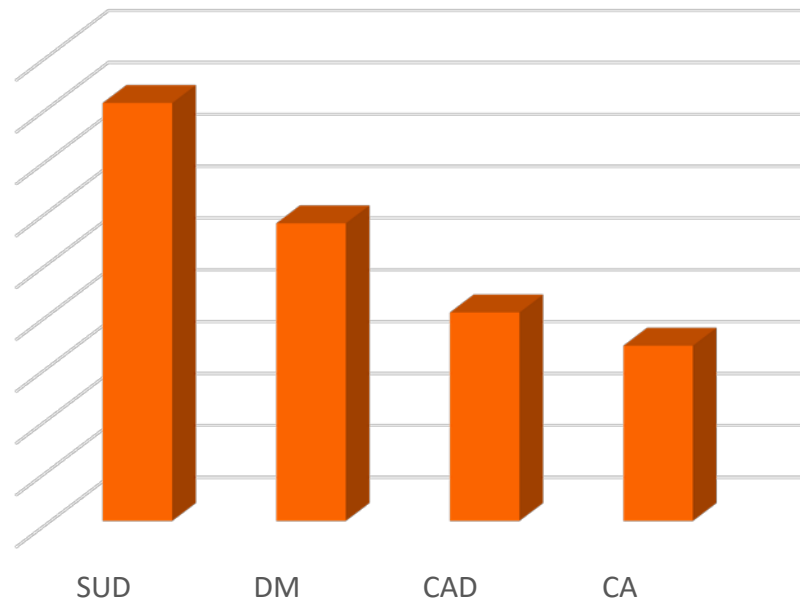
2-3: Mild SUD

4-5: Moderate SUD

6 or more: Severe SUD

1. Often taken in larger amounts or over a longer period than was intended
2. A persistent desire or unsuccessful efforts to cut down or control use
3. A great deal of time is spent in activities necessary to obtain, use, or recover from substance's effect
4. Craving or a strong desire or urge to use the substance
5. Recurrent use resulting in a failure to fulfill major role obligations at work, school, or home.
6. Continued use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by its effects.
7. Important social, occupational, or recreational activities are given up or reduced because of use.
8. Recurrent use in situations in which it is physically hazardous.
9. Continued use despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance.
10. Tolerance
11. Withdrawal

Prevalence of Substance Use Disorder (2021)



- 16.5% (46.3 million) of Adults have a Substance Use Disorder
 - 29.5 million ~ Alcohol Use Disorder
 - 24 million ~ Drug Use Disorder
 - 2.7 million ~ Opioid Use Disorder
- More than coronary heart disease (20.1 million), diabetes (28.7 million), or cancer (16.9 million)

Why Do People Take Drugs?



Addiction

“The question is frequently asked: Why does a man become a drug addict? The answer is that he usually does not intend to. [The drug] wins by default. I tried it as a matter of curiosity... I ended up hooked. You don't decide to be an addict. One morning you wake up sick and you're an addict.”

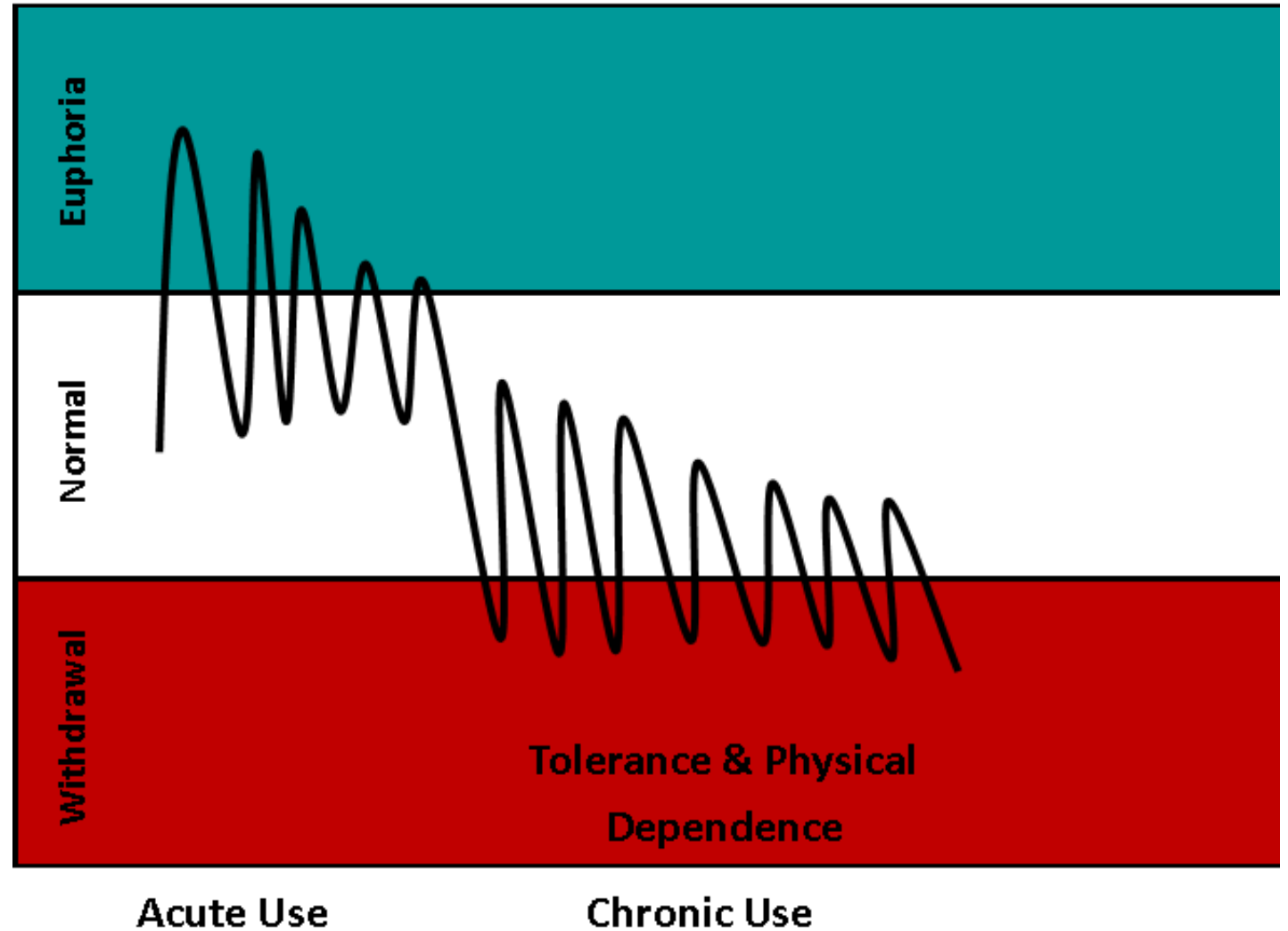
- William S. Burroughs, *Junky* (1953)

Why?

80% of young people will experiment with drugs or alcohol

- **To Feel Good**
 - Drugs produce intense feelings of pleasure.
- **To Feel Better**
 - Improve feelings of anxiety and stress
- **To Do Better**
 - Improve focus, endurance, strength
- **Curiosity & Social Pressure**
 - Peer pressure, normalization as part of a social group

Natural History of Substance Use



Risk Factors

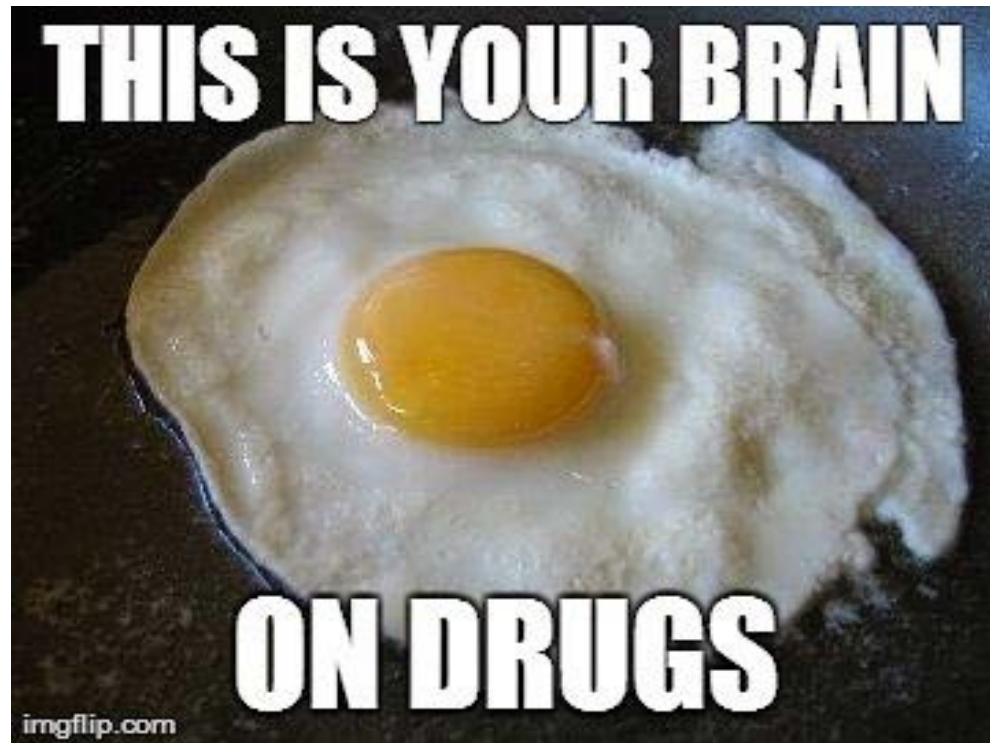
- Aggressive behavior in childhood
- Lack of parental supervision
- Low peer refusal skills
- Drug experimentation
- Availability of drugs at school
- Community poverty

Protective Factors

- Self-efficacy (belief in self-control)
- Parental monitoring & support
- Positive relationships
- Extracurricular Activities
- School anti-drug policies
- Neighborhood resources

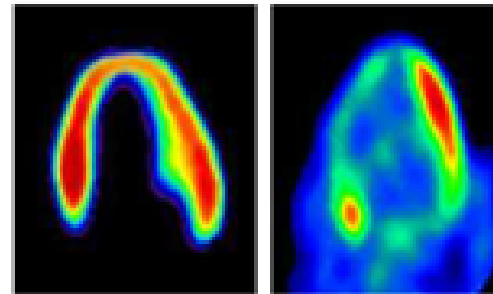
Neurobiology of Addiction

Understanding in 1980s



Understanding in 2020s

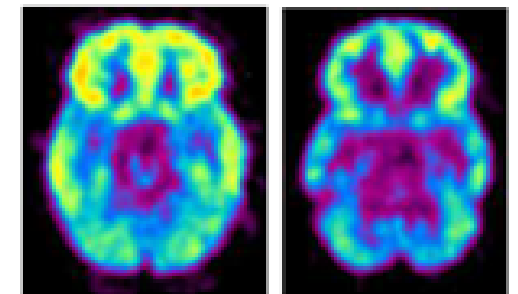
Decreased Heart Metabolism
in Coronary Artery Disease



Healthy
Heart

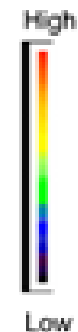
Diseased
Heart

Decreased Brain
Metabolism in Addiction



Healthy
Brain

Diseased
Brain





Genetics
Gender
Mental disorders

Chaotic home and abuse
Parent's use and attitudes
Peer influences
Community attitudes
Low academic achievement

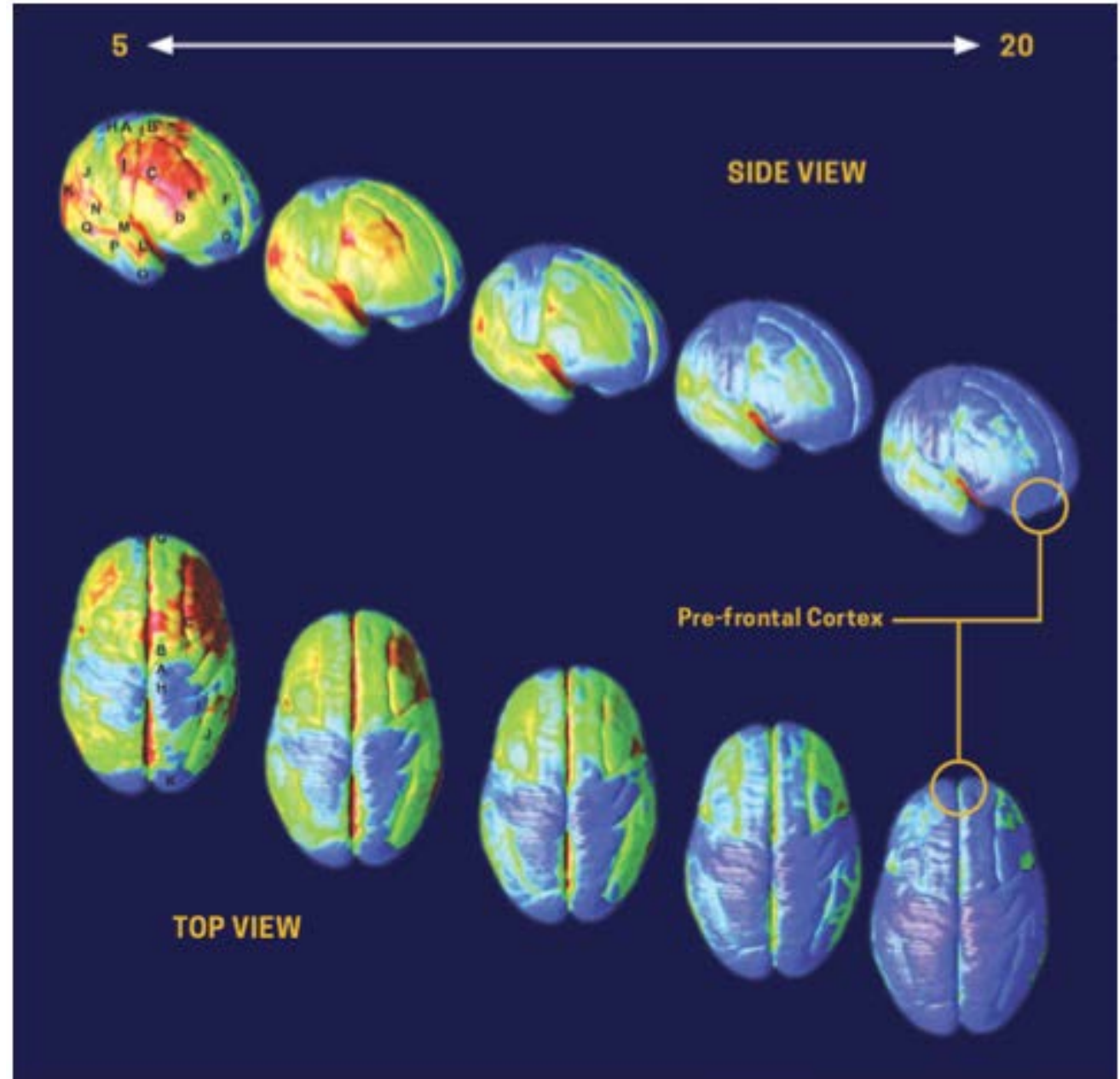
DRUG

Route of administration • Effect of drug • Early use • Availability • Cost

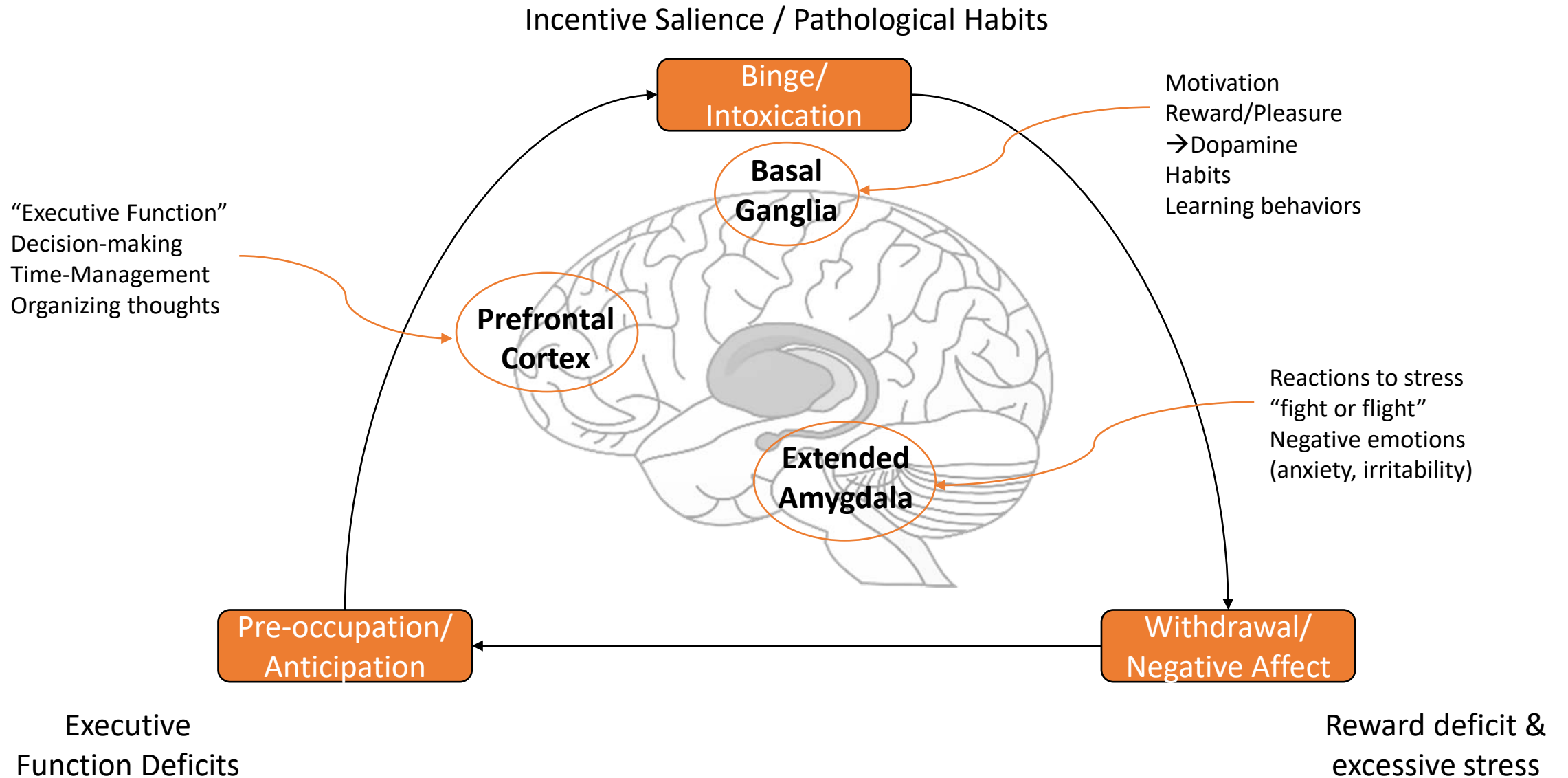


Dramatic Changes in Developing Brains

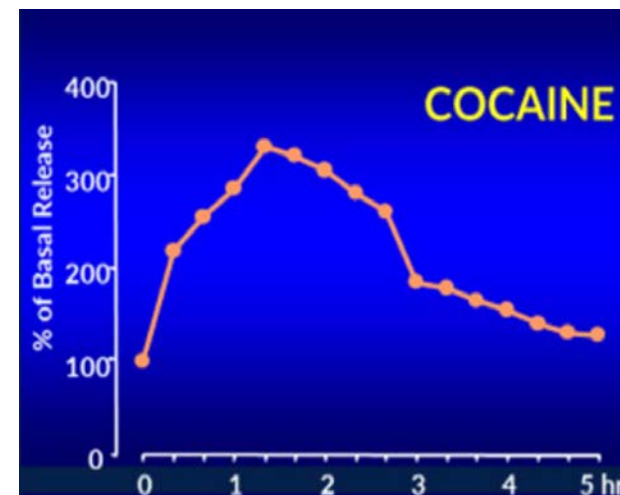
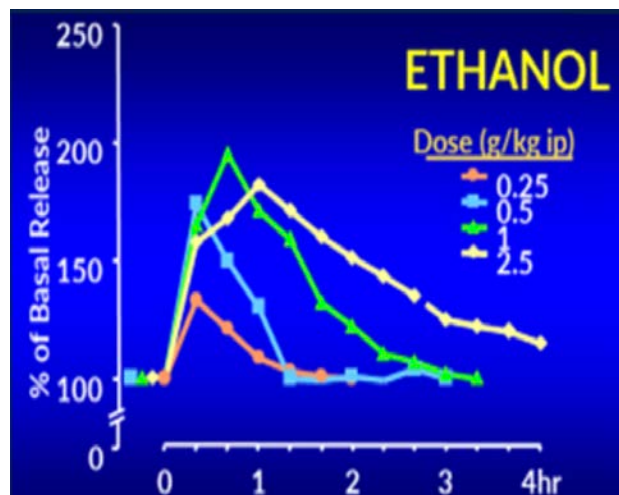
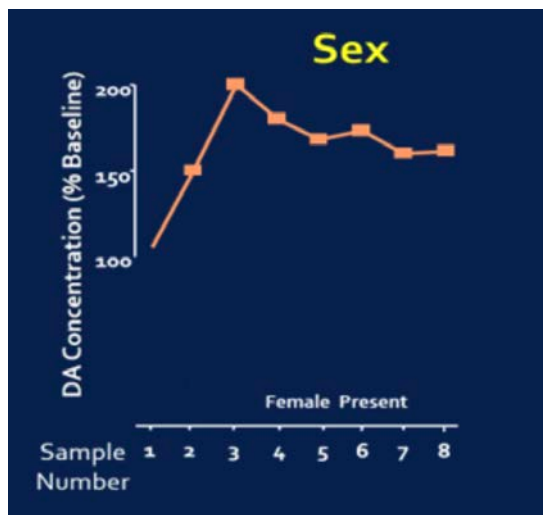
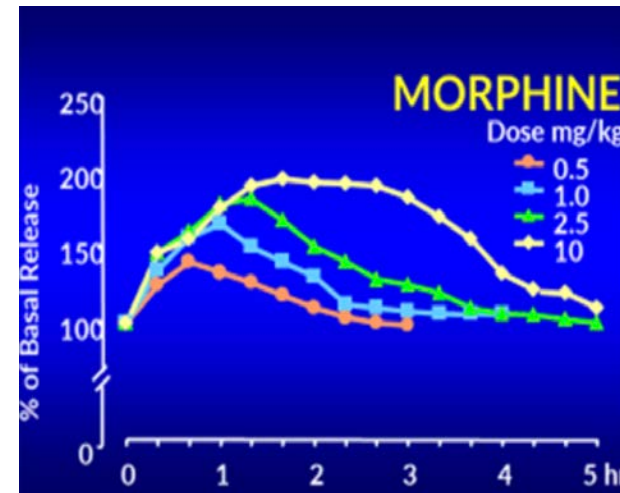
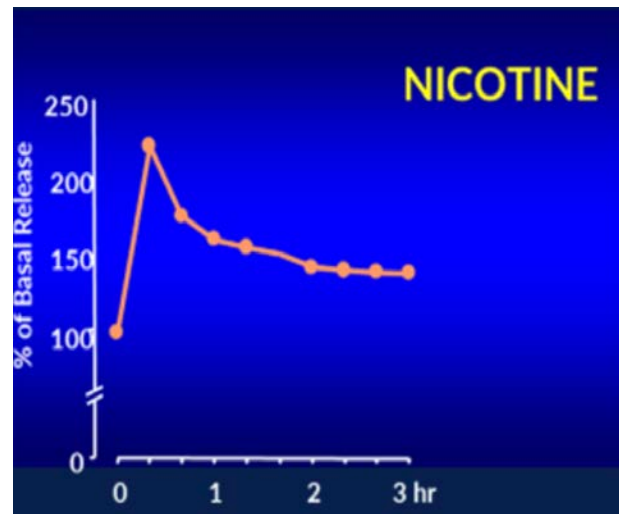
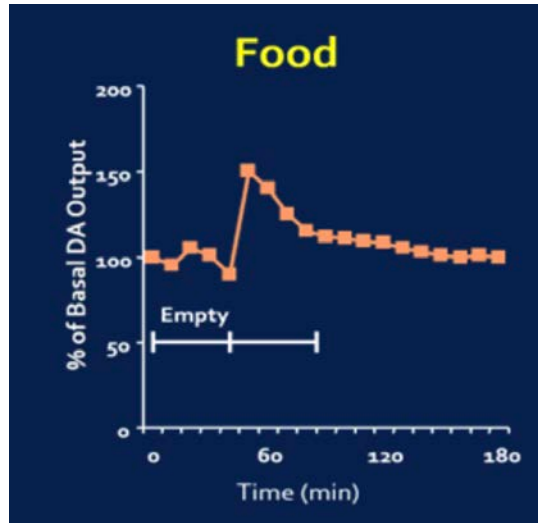
- Images of Brain Development in Healthy Children and Teens (ages 5-20)



3 Stages of the Addiction Cycle & the Brain Regions Affected



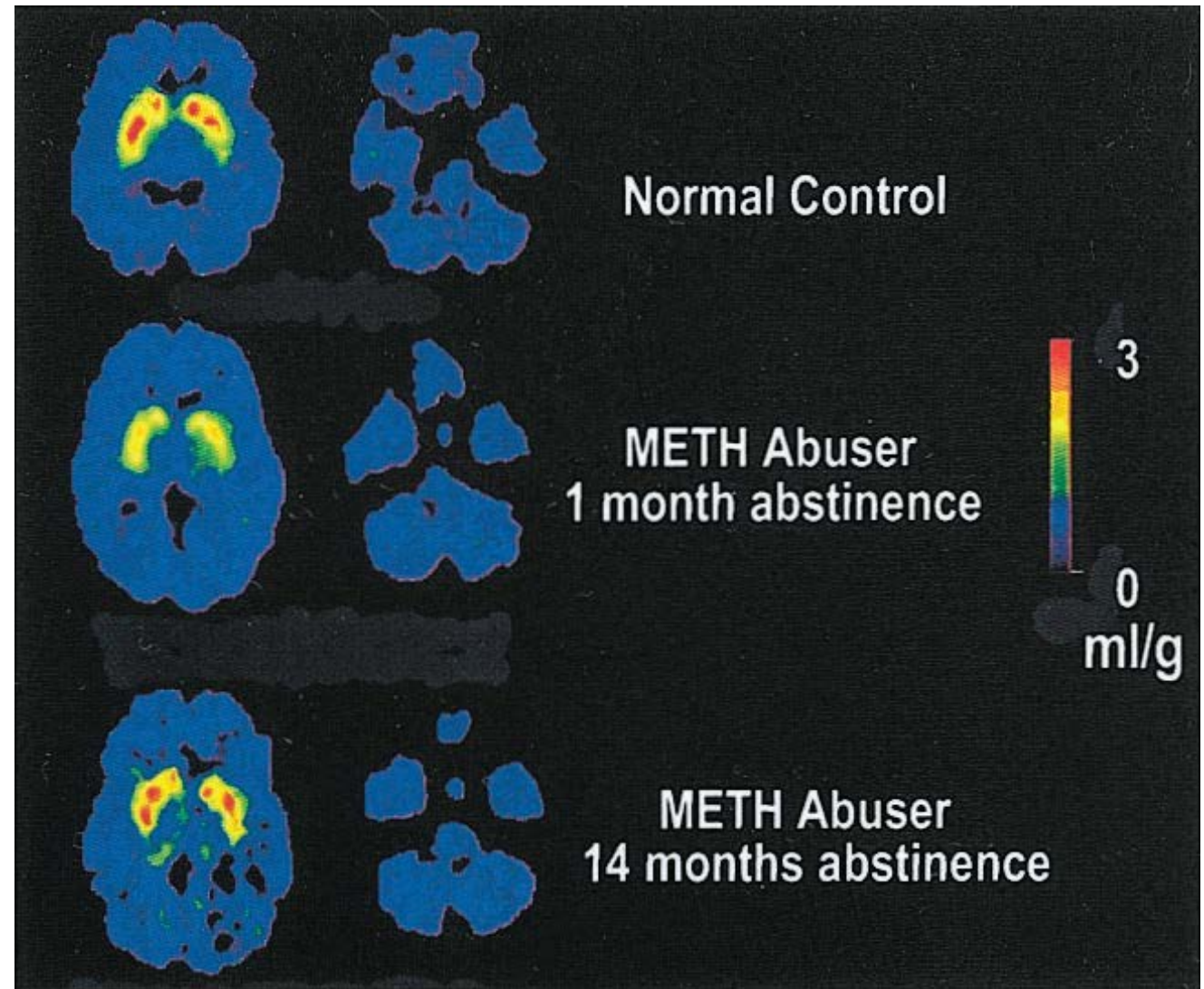
Dopamine



<u>Dopamine Index</u>	
Food	1.5
Sex	2.0
Nicotine	2.0
Cocaine	4.1
Meth	11.0

Visualizing Recovery

Brain Recovery with
Prolonged Abstinence



Let's Play

Game #1

84%

Choice 1: A sure gain of \$250

Choice 2:

16%

25% chance to gain \$1000

75% chance to gain nothing

Let's Play

Game #1

84%

Choice 1: A sure gain of \$250

Choice 2:

16%

25% chance to gain \$1000

75% chance to gain nothing

Game #2

Choice 1: A sure loss of 75%

13%

Choice 2:

25% chance to lose nothing

75% chance to lose \$1000

87%

Let's Play

Game #1

84%

Choice 1: A sure gain of \$250

Choice 2:

16%

25% chance to gain \$1000

75% chance to gain nothing

Game #2

13%

Choice 1: A sure loss of 75%

Choice 2:

87%

25% chance to lose nothing

75% chance to lose \$1000

People avoid risks to ensure gains.
Psychology trumps probability

Neurotransmitters



Drug of Abuse

- **Alcohol**
- Amphetamines & Cocaine
- Benzodiazepines & GHB
- **Cannabis**
- Hallucinogens & MDMA
- Nicotine
- **Opioids**
- Phencyclidine & Ketamine

Endogenous Neurotransmitter

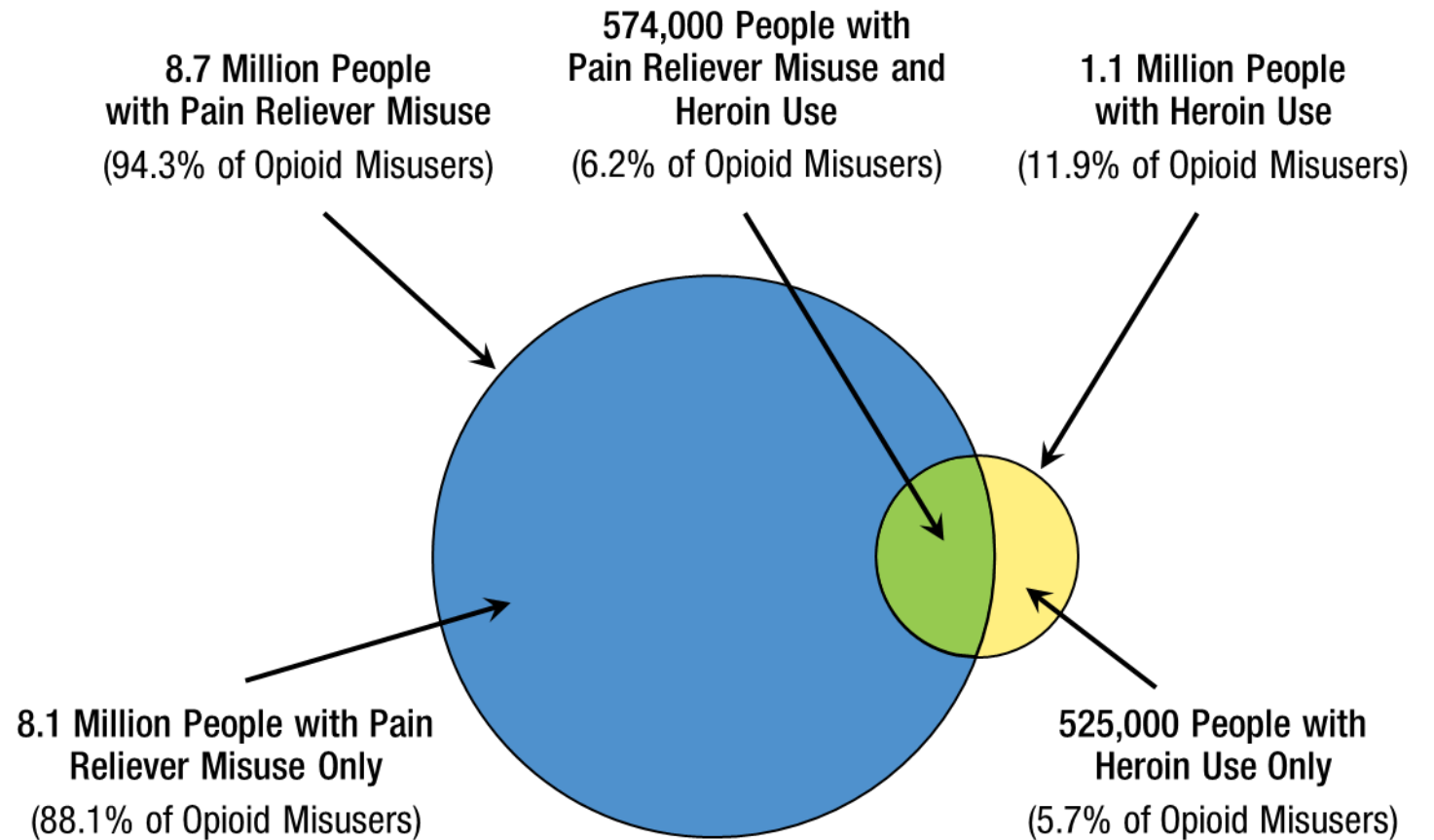
- **GABA / Glutamate**
- Dopamine
- GABA
- **Anandamide**
- Serotonin
- Acetylcholine
- **Endorphins**
- Glutamate

Opioid Epidemic



Past Year Opioid Misuse:
Among People Aged ≥ 12 ;
2021

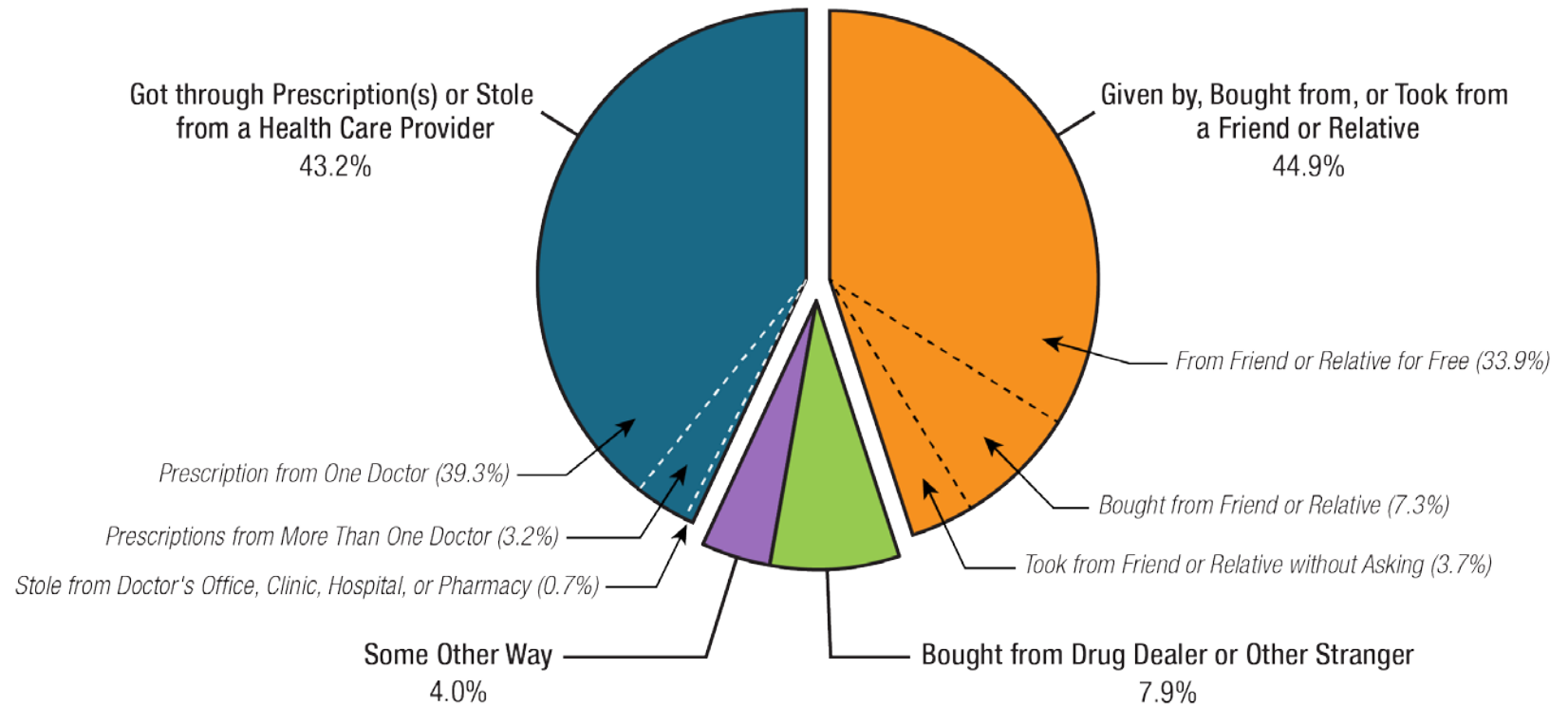
Opioid Use Disorder
– 2.9 million



9.2 Million People Aged 12 or Older with Past Year Opioid Misuse

Source Where Pain Relievers Were Obtained for Most Recent Misuse: Age ≥ 12 Who Misused Pain Relievers in the Past Year

2021

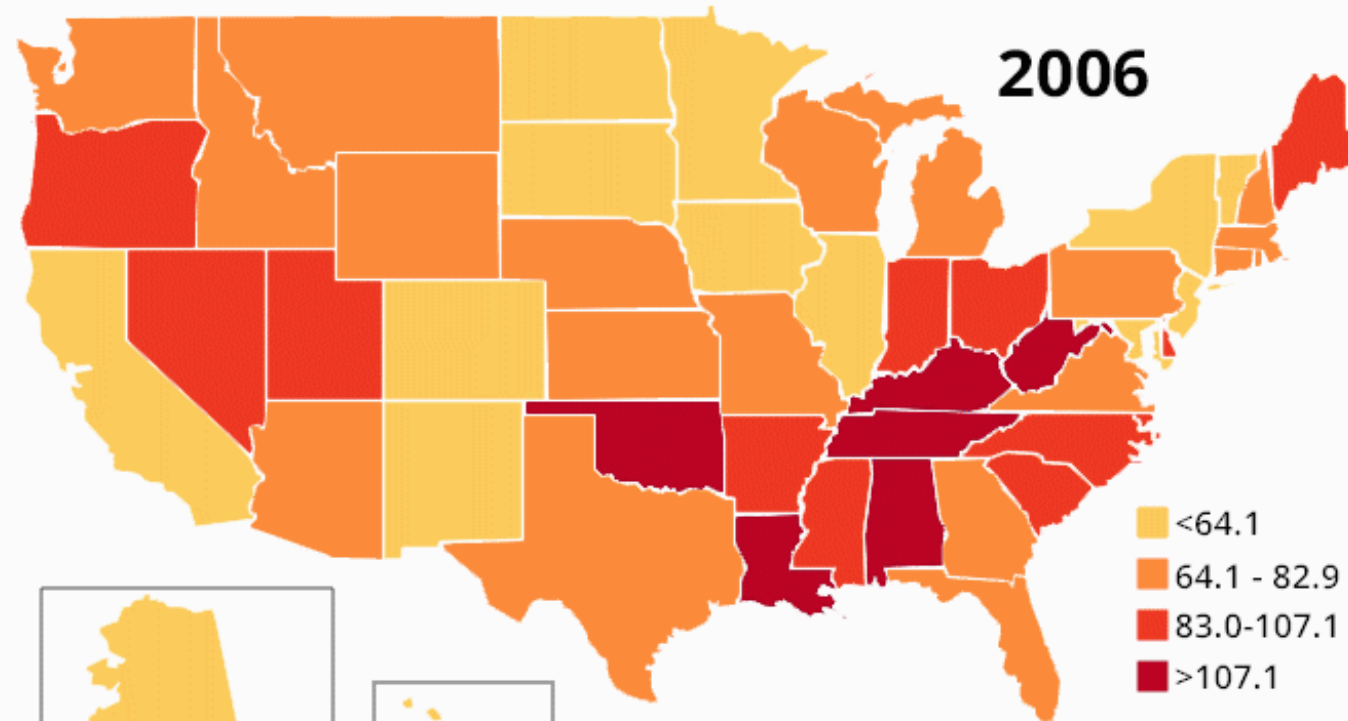


8.7 Million People Aged 12 or Older Who Misused Pain Relievers in the Past Year

U.S. Opioid Dispensing Rates per 100 People, 2006 - 2020

U.S. Opioid Dispensing Rates per 100 people, from 2006 to 2020

How have rates improved over time?

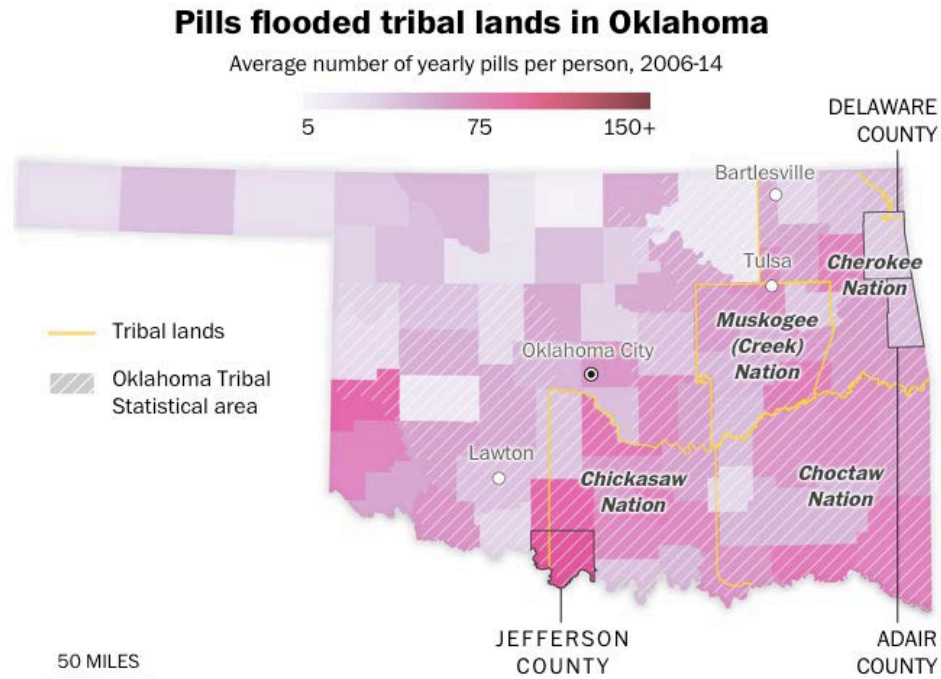


Source: IQVIA Xponent, 2006-2020



Centers for Disease
Control and Prevention
National Center for Injury
Prevention and Control

Opioids in Oklahoma



Opioid Dispensing Rate per 100 persons

County	2006	County	2020
Pittsburg	183.0	Harper	205.1
Carter	177.7	Harmon	171.3
Pottawatomie	161.0	Love	126.2
Tulsa	152.4	Kingfisher	110.9
Stephens	140.9	Tulsa	103.1
Muskogee	138.5	Oklahoma	97.3
Beckham	133.5	Carter	84.3
Oklahoma	133.1	Muskogee	71.4
Custer	131.8	Tillman	65
Woodward	130.2	Adair	62.2

Source: As Opioids flooded tribal lands across the US, overdose deaths skyrocketed. Washington Post. June 29, 2020.

<https://www.washingtonpost.com/graphics/2020/national/investigations/native-american-opioid-overdose-deaths/>

Source: <https://www.cdc.gov/drugoverdose/rxrate-maps/index.html>

Terminology

- Endorphins – describes the whole class of endogenous opioid ligands
 - Beta-endorphin, enkephalin, dynorphin
- Opioid – describes entire class of non-endogenous (natural or synthetic) and endogenous compounds that bind to one or more types of opioid receptors
 - Methadone, fentanyl, oxycodone
- Opiate – describes compounds naturally derived from the poppy plant
 - Morphine, codeine



Endogenous Opioids & Opioid Receptors

Opioid Class	Opioid Receptor Type
Beta-endorphin Endomorphin	Mu Opioid Peptide Receptor
Dynorphin	Kappa Opioid Peptide Receptor
Enkephalin	Delta Opioid Peptide Receptor
<i>Orphanin/Nociceptin (opiate-like)</i>	<i>Nociceptin/Orphanin FQ Peptide Receptor, Opioid Receptor Like-1</i>



Opioid Potency

Opioid	Relative Potency	Lethal Dose
Morphine	1x	1 pea
Diacetylmorphine (heroin)	2x	1 sunflower seed
Fentanyl	100x	1 sesame seed
Sufentanil	500x	1 grain of sand
Carfentanil	10,000x	0.5 grain of salt

MME for Commonly Prescribed Opioids

Opioid	Conversion Factor
Morphine	1
Hydrocodone	1
Codeine	0.15
Oxycodone	1.5
Fentanyl transdermal (mcg/hr)	2.4
Oxymorphone	3
Hydromorphone	4
Methadone	
1-20mg/day	4
21-40mg/day	8
41-60mg/day	10
61-80mg/day	12

Role of Medications in the Treatment of Opioid Use Disorder


Overdose

- Acute intervention, possible reversal, and close monitoring

Withdrawal / Early Stabilization

- Reduction and stabilization of withdrawal symptoms
- Opportunity to initiate and engage in ongoing addiction treatment

Maintenance Therapy

- Prevents or eliminates withdrawal
 - Diminishes or eliminates drug craving and use of illicit opioids
 - Blocks or attenuates the effects of heroin and other abused opiates
 - Risk/harm reduction, reduces overdose risk
 - Increased treatment retention and engagement in comprehensive rehabilitation
 - Decreased medical and psychiatric symptoms, improves health, reduced risk of HIV and Hep C infection
 - Improved social determinates such as employment, family relations
 - Decreased criminal behavior
- 

Opioid Overdose

Classic Triad Seen in Overdose

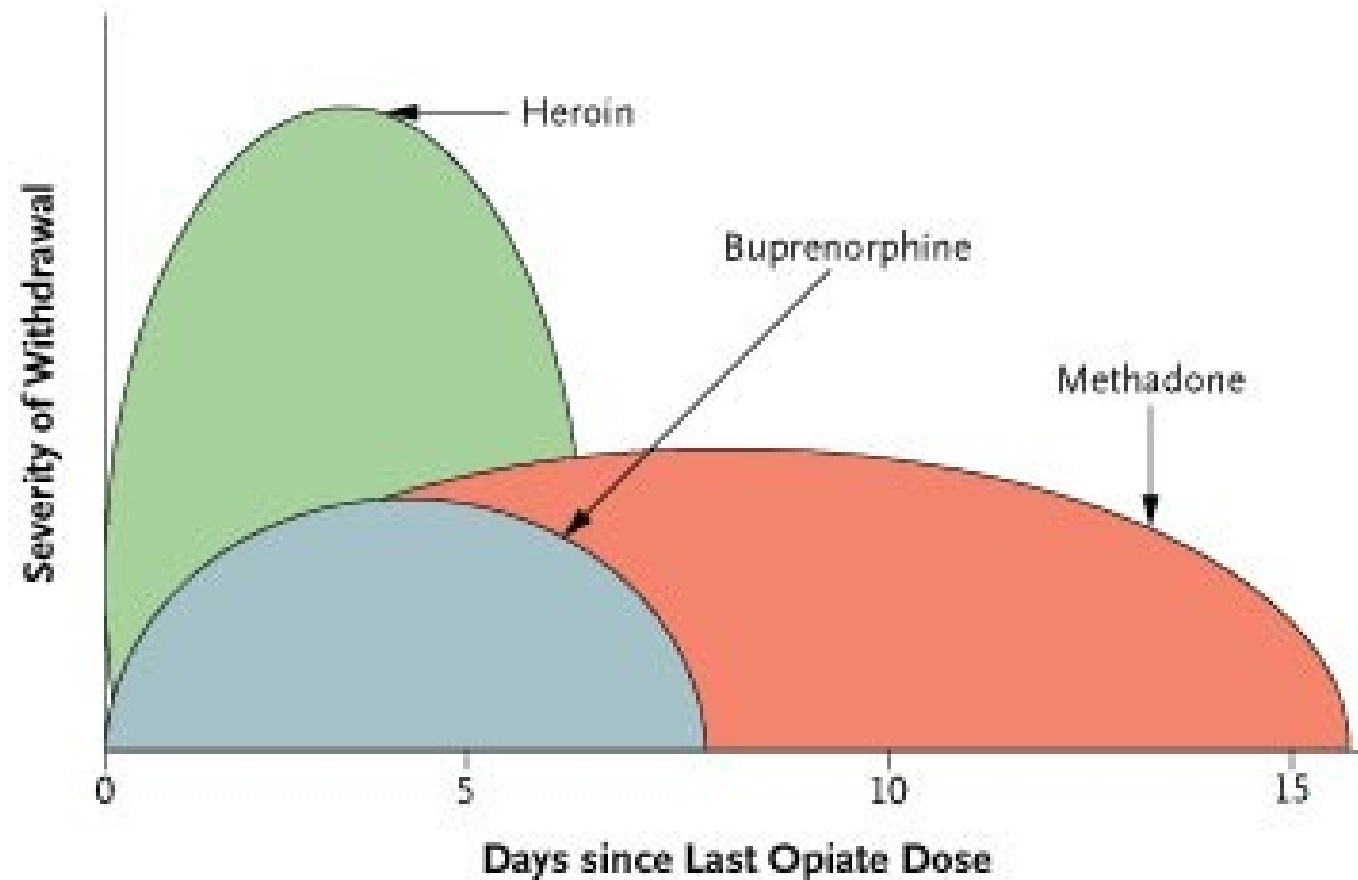
- **Miosis** (Dilated with Prolonged ↓ PO2)
- **Decreased level of Consciousness / Coma**
- **Respiratory Depression**
- Pulmonary Edema (non-cardiogenic)
- Seizures
 - Meperidine, Tramadol

Management of Opioid Overdose

- Ventilatory support if needed
- Parenteral Naloxone
- If IV access, bolus 0.1mg/min titrated to
 - RR >10/min
 - Improved level of consciousness
 - No withdrawal
 - If needed ongoing IV infusion 2/3 of initial bolus dose/hr.
- If no IV access, 0.4-0.8mg SQ or IM & observe
- Naloxone OD Prevention Kits



Severity of Opioid-Withdrawal Symptoms after Abrupt Discontinuation of Equivalent Doses of Heroin, Buprenorphine, and Methadone



Clinical Opiate Withdrawal Scale (COWS)

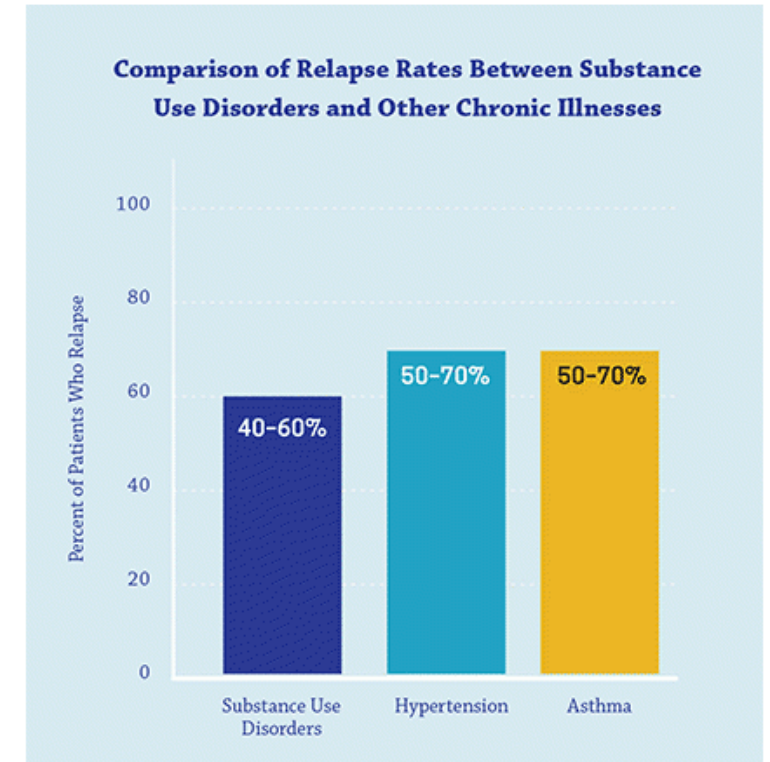
Resting Pulse Rate: _____ beats/minute <i>Measured after patient is sitting or lying for one minute</i> 0 pulse rate 80 or below 1 pulse rate 81-100 2 pulse rate 101-120 4 pulse rate greater than 120	GI Upset: over last 1/2 hour 0 no GI symptoms 1 stomach cramps 2 nausea or loose stool 3 vomiting or diarrhea 5 multiple episodes of diarrhea or vomiting
Sweating: over past 1/2 hour not accounted for by room temperature or patient activity. 0 no report of chills or flushing 1 subjective report of chills or flushing 2 flushed or observable moistness on face 3 beads of sweat on brow or face 4 sweat streaming off face	Tremor observation of outstretched hands 0 no tremor 1 tremor can be felt, but not observed 2 slight tremor observable 4 gross tremor or muscle twitching
Restlessness Observation during assessment 0 able to sit still 1 reports difficulty sitting still, but is able to do so 3 frequent shifting or extraneous movements of legs/arms 5 unable to sit still for more than a few seconds	Yawning Observation during assessment 0 no yawning 1 yawning once or twice during assessment 2 yawning three or more times during assessment 4 yawning several times/minute
Pupil size 0 pupils pinned or normal size for room light 1 pupils possibly larger than normal for room light 2 pupils moderately dilated 5 pupils so dilated that only the rim of the iris is visible	Anxiety or Irritability 0 none 1 patient reports increasing irritability or anxiousness 2 patient obviously irritable or anxious 4 patient so irritable or anxious that participation in the assessment is difficult
Bone or Joint aches If patient was having pain previously, only the additional component attributed to opiates withdrawal is scored 0 not present 1 mild diffuse discomfort 2 patient reports severe diffuse aching of joints/muscles 4 patient is rubbing joints or muscles and is unable to sit still because of discomfort	Gooseflesh skin 0 skin is smooth 3 piloerection of skin can be felt or hairs standing up on arms 5 prominent piloerection
Runny nose or tearing Not accounted for by cold symptoms or allergies 0 not present 1 nasal stuffiness or unusually moist eyes 2 nose running or tearing 4 nose constantly running or tears streaming down cheeks	Total Score _____ The total score is the sum of all 11 items Initials of person completing assessment: _____

Score: 5-12 = mild; 13-24 = moderate; 25-36 = moderately severe; more than 36 = severe withdrawal

This version may be copied and used clinically.

Opioid Use Disorder Treatment Outcome*

- Methadone Maintenance 50-80%
- Buprenorphine-Naloxone Maintenance 40-70%
- Naltrexone Maintenance (oral, depot) 10-20%,
20-60%
- “Drug Free” (no pharmacotherapy) 5-20%
- Short-term Detoxification (any mode) 5-20%



JAMA, 284:1689-1695, 2000.

***Methadone & Buprenorphine maintenance
treatment reduces overdose risk by 37-86%***

// >350,000 in OTPs on methadone and est. > 800,000 on buprenorphine //

Buprenorphine

Onset of Action 30-60 minutes

Peak effect 90-100 minutes, half-life 24-48 hours

Metabolism via CYP 3A4 isoenzyme

- Those on CYP 3A4 inhibitors (azole, antifungals, macrolide antibiotics, & HIV protease inhibitors) should be closely monitored, and dose adjustments may need to be made
- Those on CYP 3A4 inducers (phenobarbital, carbamazepine, phenytoin, and rifampin) should also be monitored, and dose adjustments may need to be made

Can alter liver enzymes

- Liver function should be monitored periodically depending upon any recent symptoms or history of hepatitis
- Consider dose reduction or transition to mono formulation if $\geq 3x$ upper limit of normal

Pregnancy

- MOTHER study, mono (without naloxone) formulation, reduced morphine/ hospitalization/ NAS

Buprenorphine

Multiple FDA Approved Formulation for OUD: SL film or tablet, monthly SQ, 6-month implant

- Partial agonist of the u-opioid receptor and antagonist of the k-opioid receptor.
 - High affinity for u-opioid receptor
 - Competes with other opioids and inhibits their effects
 - Slow dissociation from u-opiate receptor
 - Prolonged therapeutic effect
- At low doses, acts as an agonist; at high doses or in patients dependent on high doses of chronic opioids, it can act as an antagonist.



Naltrexone

Long-acting, competitive, non-selective opioid-antagonist with highest affinity to mu-opioid receptor

- Withdrawal treatment for those with physical dependence
- POC toxicology
- Induction Protocol

Metabolism via CYP450

- Excretion predominately urine (53-79%), partial feces
- Active metabolite 6-beta-naltrexol
- Half-life 4 hours for naltrexone and 13 hours for 6-beta-naltrexol

Oral formulation FDA approved 1984

- Once daily, 3x week alternative
- Low adherence limits use to highly motivated populations

Long-acting injectable formulation (naltrexone-XR), FDA approved for OUD in 2010 *(Preferred Formulation)*



Methadone

Mu-opioid receptor agonist & NMDA antagonist (reduces development of tolerance)

Metabolism via CYP450

- Excreted in urine and feces
- Avoids accumulation and reduces risk of toxicity for those with renal or liver dysfunction
- Half-life 24-36 hours but may range from 4-91 hours

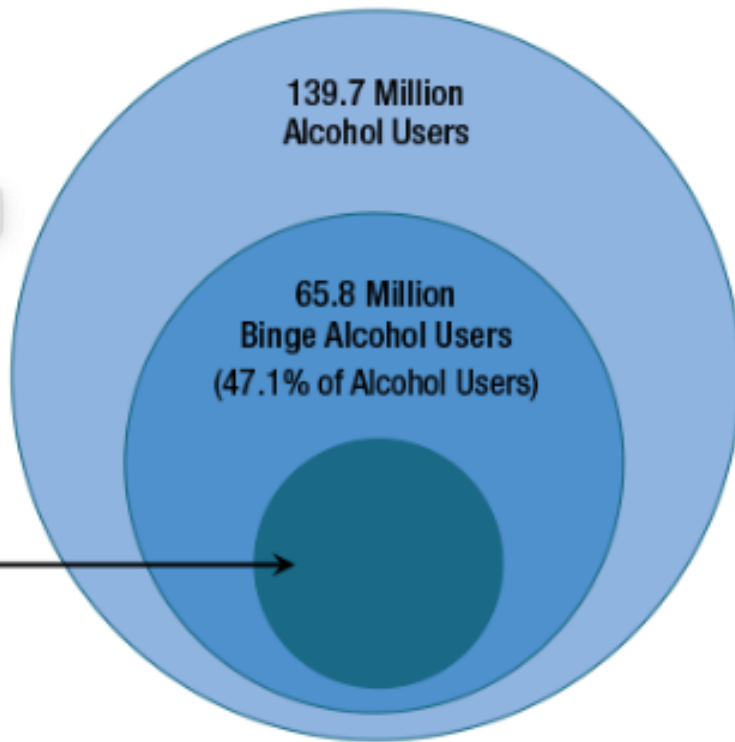


Alcohol Use Disorder

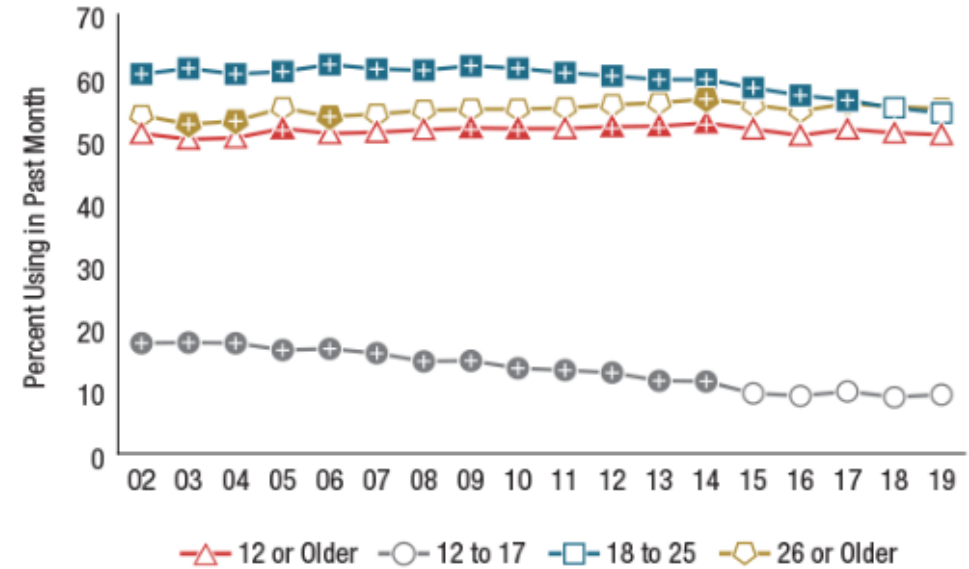


Alcohol

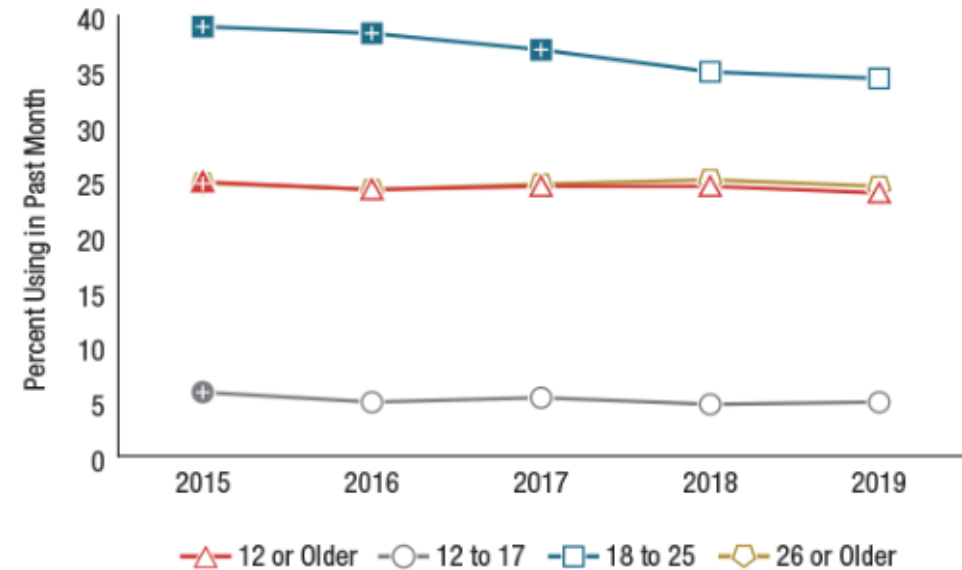
Figure 6



Past Month Alcohol Use among People Aged ≥ 12



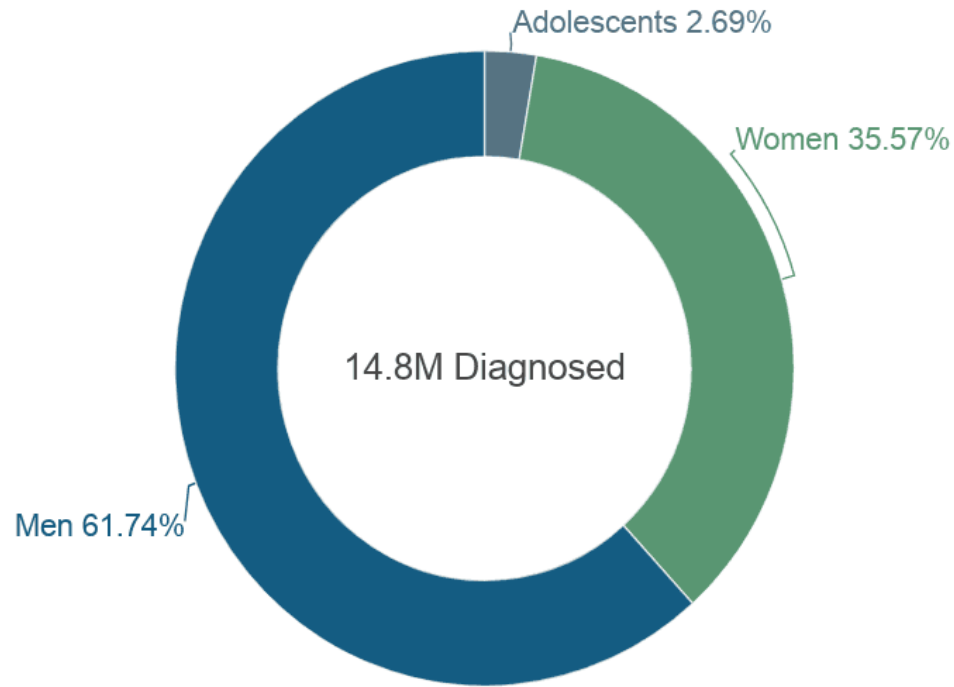
Past Month Binge Alcohol Use among People Aged ≥ 12



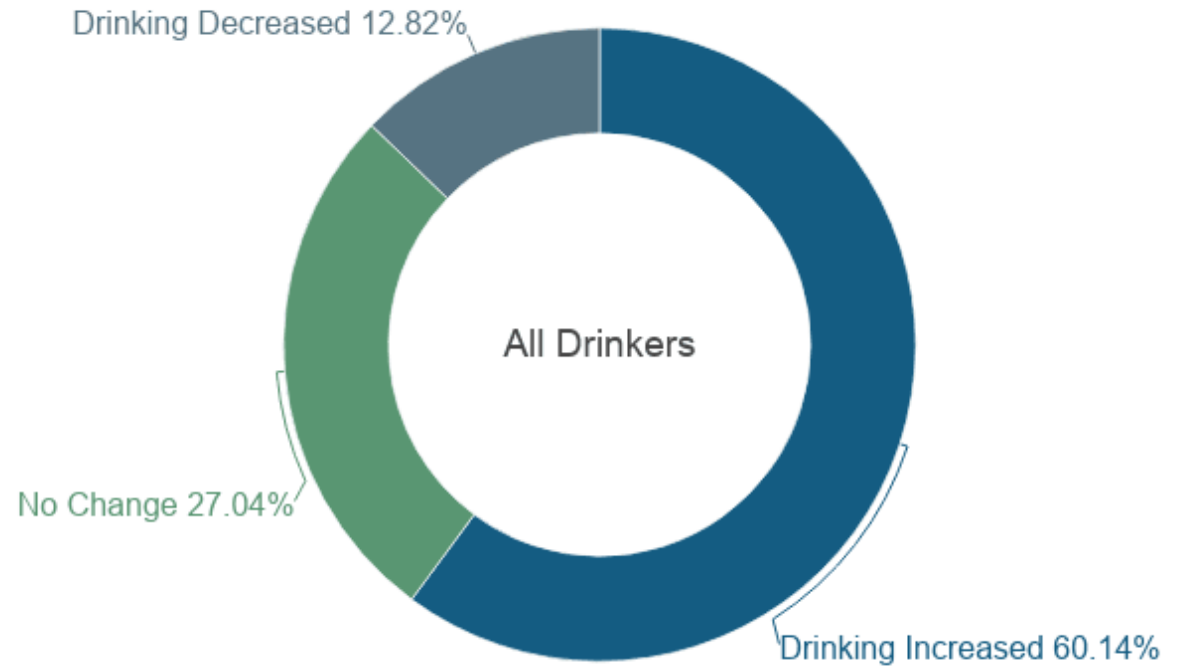
DATA SOURCE: NCHS, National Health Interview Survey, 1997-2016, Sample Adult Core Component.
<https://www.cdc.gov/nchs/data/nhis/earlyrelease/earlyrelease201705.pdf>

Alcohol

Alcohol Use Disorder in the United States

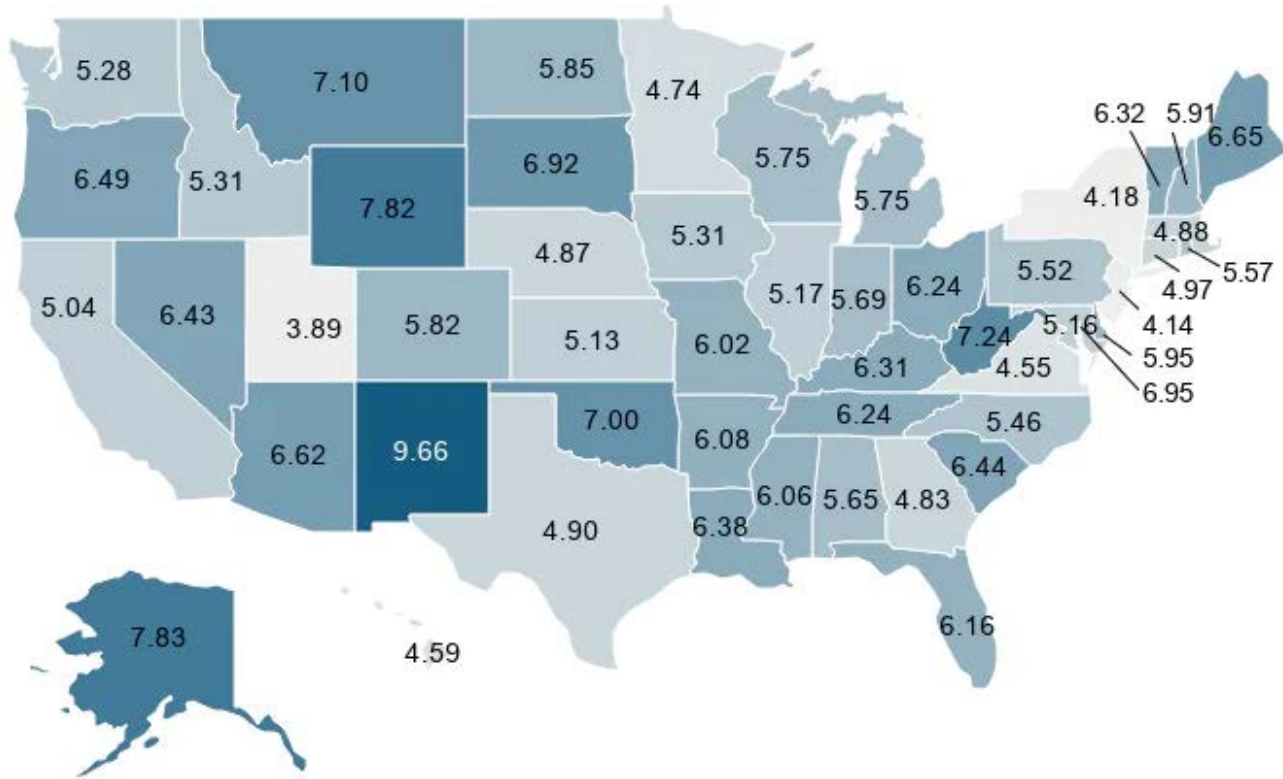


COVID Effect on Alcohol Consumption



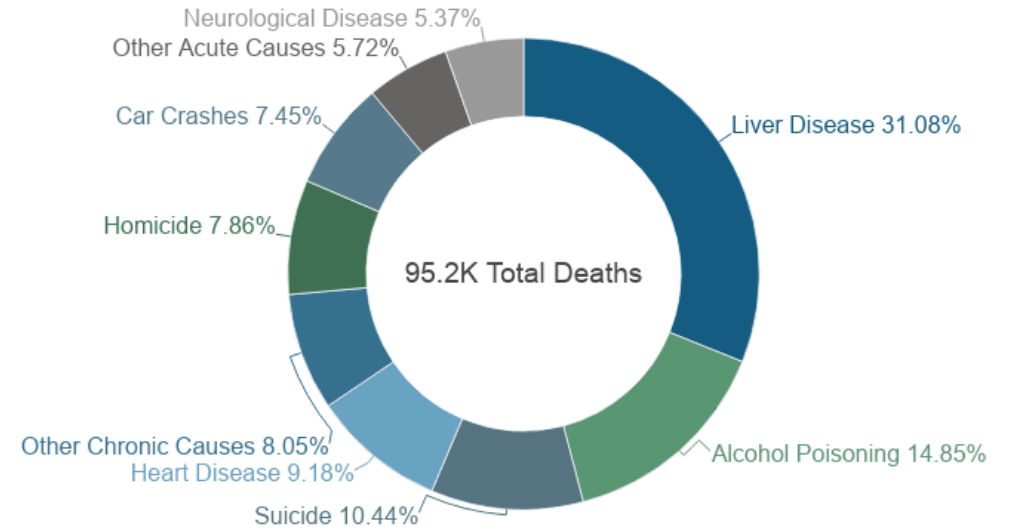
Alcohol

Alcohol-Related Deaths per 10,000 Adults



National Center for Drug Abuse Statistics, data from U.S. Centers for Disease Control and Prevention

Causes of Alcohol-Related Deaths



Alcohol Withdrawal

Epidemiology

Neurobiology

- Neurotoxicity
- Kindling

Management of Alcohol Withdrawal

- Benzodiazepines
- Anticonvulsants
- **Alleviate Symptoms**
- **Prevent Progression of Symptoms**
- **Treatment Underlying Comorbidities**



Alcohol Withdrawal Treatment

Thiamine Deficiency

Thiamine

- Important cofactor for several enzymatic reactions
- Cerebral glucose utilization
- Glutamate elimination

Wernicke's Encephalopathy

- Partial to complete paralysis of extra ocular muscles
- Nystagmus
- Ataxia
- Mental disturbances
- Mortality: 10-20% if untreated
- Treatment: Thiamine replacement

Korsakoff's Psychosis

- Antegrade amnesia
- Confabulations

PRIOR dextrose administration



States of Alcohol Withdrawal Syndrome

1. Autonomic Hyperactivity
2. Hallucinations
3. Neuronal Excitation
4. Delirium Tremens



States of Alcohol Withdrawal Syndrome

1. Autonomic Hyperactivity
2. Hallucinations
3. Neuronal Excitation
4. Delirium Tremens

Autonomic Hyperactivity

- Clear Sensorium
- Tremulous
- Diaphoresis
- Anxiety
- Nausea/Vomiting
- Increase catecholamine in urine, serum & CSF
- Start 6 hours after last drink Peak 24-48 hours



States of Alcohol Withdrawal Syndrome

1. Autonomic Hyperactivity
2. Hallucinations
3. Neuronal Excitation
4. Delirium Tremens

Hallucinations

- Most Common = Visual

Neuronal Excitation

- Seizures (Generalized Tonic – Clonic)
- Up to 10%
- Most common in first 12-48 hours after last drink



States of Alcohol Withdrawal Syndrome

1. Autonomic Hyperactivity
2. Hallucinations
3. Neuronal Excitation
4. Delirium Tremens

Delirium Tremens (DTs)

- Most often occur within 72 hours after the last drink
- Delirium with Tremor
- Autonomic hyperactivity
- Hallucinations
- Electrolyte abnormalities
- Dehydration
- Hemodynamic instability
- Mortality up to 15%
 - Cardiovascular / respiratory collapse



Mechanisms Underlying Alcohol Withdrawal

- Multiple neuroadaptive changes in CNS
 - Decreased GABA activity
 - Increased glutamate activity
 - Upregulated calcium channel activity
 - Increased noradrenergic activity

- Alcohol withdrawal is associated with increased CNS activity



Anton RF, Becker HC, eds. Pharmacotherapy and pathophysiology of alcohol withdrawal. (Handbook of Experimental Pharmacology.) 1995.

CIWA-Ar

(Clinical Institute Withdrawal Assessment of Alcohol, Revised)

- It requires under two minutes to administer
- It requires no medical knowledge
- It provides you with a quantitative score that predicts the severity of withdrawal from alcohol



CIWA-Ar

(Clinical Institute Withdrawal Assessment of Alcohol, Revised)

- **Nausea / Vomiting: 0-7**
 - 0 – none
 - 7 – constant nausea & frequently dry heaves and vomiting
 - **Tremors: 0-7**

Have patient extend arms & spread fingers

 - 0 – none
 - 7 – severe, even with arms not extended
 - **Anxiety: 0-7**
 - 0 – no anxiety, patient at ease
 - 7 – equivalent to acute panic states seen in severe delirium or acute schizophrenic reactions
 - **Agitation: 0-7**
 - 0 – normal activity
 - 7 – paces back and forth, or thrashes about
 - **Paroxysmal Sweats: 0-7**
 - 0 – no sweats
 - 7 – drenching sweats
 - **Orientation and Clouding of Sensorium: 0-4**

Ask “What day is this? Where are you? Who am I?”


 - 0 – none
 - 4 – Disoriented to place and/or person
 - **Tractile Disturbance: 0-7**

Ask “Have you experienced any itching, pins & needles sensation, burning, numbness, or a feeling of bugs crawling on or under your skin?”

 - 0 – none
 - 7 – continuous hallucination
 - **Auditory Disturbance: 0-7**

Ask “Are you more aware of sounds around you? Are they harsh? Do they startle you? Do you hear anything that disturbs you or that you know isn’t there?”
 - **Visual Disturbance: 0-7**

Ask “Does the light appear to be too bright? Is its color different than normal? Does it hurt your eyes? Are you seeing anything that disturbs you or that you know isn’t there?”
 - **Headache: 0-7**

Ask “Does your head feel different than usual? Does it feel like there is a band around your head?” Do not rate dizziness or lightheadedness.
- 

CIWA-Ar

(Clinical Institute Withdrawal Assessment of Alcohol, Revised)

- <8: Minimal – Mild AW, Drug therapy not necessarily indicated
- 8-15: Moderate AW, Drug therapy indicated.
- >15: Severe, Drug therapy absolutely indicated, consider inpatient treatment



Treatment Plan

- Motivational Enhancement Therapy (MET)
- Cognitive Behavioral Therapy (CBT)
- Medical Management (MM)
- Community Based Peer Support Groups

Acute Detoxification

- Benzodiazepines
 - Chlordiazepoxide
 - Diazepam
 - Lorazepam
- Anticonvulsants
 - Gabapentin
 - Carbamazepine
 - Valproic Acid



Pharmacogenetics in Alcohol Use Disorder Treatment

Medication	Genetic Variant	Outcome Moderated
Topiramate	GRIK1 (rs2832407)	Heavy Drinking Days (%); side effects
Naltrexone*	OPRM1 (Asn40Asp), (re1799971), DRD4, VNTR	Heavy drinking days (%); abstinence rates; relapse to heavy drinking
Ondansetron	LL/LS/SS (5-HTTLPR) (rs1042173), SLC6A4 (5-HTTLPR)	Drinks per drinking day; adays abstinent (%)
Sertraline	5-HTTLPR triallelic SLC6A4	Heavy drinking days (%); drinking days (%)
Acamprosate*	GATA4 (rs1327367)	Relapse (Help Maintain Abstinence)
Disulfiram*	DBH (rs161115)	Adverse events; Improve Treatment Adherence

*FDA Approved

Naltrexone

- Reduces Craving
- Modulates the mesolimbic dopamine system in the VTA & projections to the nucleus accumbens
- Patient does not experience the full euphorogenic / reinforcing effect of alcohol
- Prevents a slip from becoming a relapse
- Dose
 - Oral: 50mg daily
 - IM: 380 mg IM/month

Predict + Response

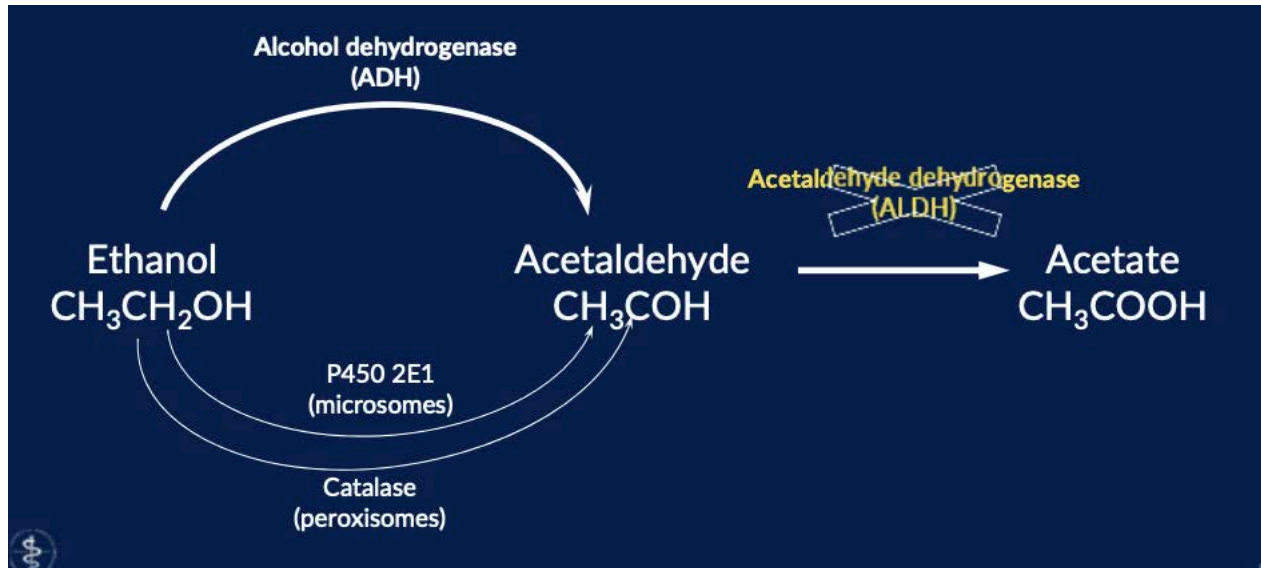
- Male Sex
- + FamHx AUD
- + Cravings
- Polymorphism of opioid receptor gene OPRM1

Acamprosate

- Stabilize glutamatergic neurotransmission
- Anticraving, Reduced protracted withdrawal
- Reduce negative reinforcement (abstinence craving)
- Dose
 - Oral: 666mg TID



Disulfiram



- Disulfiram irreversibly binds to acetaldehyde dehydrogenase inhibiting the metabolism of acetaldehyde to acetate
- Acetaldehyde accumulates resulting in a very unpleasant reaction (tachycardia, headache, nausea, vomiting, flushing).



Stigma of Addiction



How would you characterize your approach to addiction and addiction treatment?

- A. Addiction is different from other chronic diseases because people who use drugs or alcohol are making a choice
- B. Patients with addiction have to want to get better so treatment should not be prioritized over treatment for diseases such as diabetes or heart disease.
- C. Addiction is a chronic disease with successful outcomes when treatment is patient-centered and similar in approach to diabetes or heart disease care.
- D. Addiction is similar to other chronic diseases except using drugs is a crime and should be punished.

Medications for Addiction

“What it comes down to is that we take care of the pharmacological problems, leaving the addict, and everyone else, free to turn his attention to other problems. It does not strike me as relevant whether these patients get off methadone. Some may want to and that’s fine. What is relevant is that a treatment can be developed so that the addict can become a socially useful citizen, happy in himself and in society.”

- Dr. Marie Nyswander. *The New Yorker* (1965)

Myths: They're Still "Addicted"

- “But they’re still addicted.....”
- “That is like saying a diabetic is addicted to insulin... These people are no longer addicts in the sense that an addict is someone involved in the compulsive self-administration of narcotics. They’re being given medicine by a doctor. There is every possibility, from what we know so far, that the pharmacology of a real addict makes it necessary for him to have drugs to function, just as a diabetic requires insulin.”
 - Dr. Marie Nyswander. *The New Yorker* (1965)

Stigma Around Medication

- “But it’s immoral giving somebody drugs....”
- “Tell me, is a molecule of methadone more immoral than a molecule of insulin? Look if you can make it off anything, more power to you. But if you can’t don’t confuse medication with immorality.”
 - Dr. Marie Nyswander. *The New Yorker* (1965)



Evidence and Practice Gap

- “[The] profound gap between the science of addiction and current practice... is a result of decades of marginalizing addiction as a social problem rather than treating it as a medical condition. Much of what passes for “treatment” of addiction bears little resemblance to the treatment of other health conditions.”

The Trouble with Tough Love

“...I have never understood the logic of tough love. I took drugs compulsively because I hated myself, because I felt as if no one – not even my family – would love me if they really knew me.

How could being “confronted” about my bad behavior help me with that? Why would being humiliated, once I’d given up the only thing that allowed me to feel safe emotionally, make me better? My problem wasn’t that I needed to be cut down to size; it was that I felt I didn’t measure up.

In fact, fear of cruel treatment kept me from seeking help long after I began to suspect I needed it.”




What if...

- What if we treated other diseases the way we treat addiction?





What if...

- You go to the hospital with chest pain and are found to be having a heart attack
 - Told its “Your Fault” because of your “Choices”
 - Denied treatment because you “did it to yourself”
 - Given a list of cardiologists to call
 - Only given aspirin if you agree to go to counseling
 - Kicked out of the hospital to experience more chest pain
- 

Current Treatment for SUDs

- Everyday experience of patient who seek treatment:
 - Told its “Your Fault” because of your “Choices”
 - Denied treatment because you “did it to yourself”
 - Given a list of addiction treatment centers to call
 - Only given buprenorphine or methadone if you agree to go to counseling
 - Kicked out of the hospital if relapse occurs




What if...

- We treated addiction the way we treat diseases?



What If...

- Only prerequisite for treatment is having SUD
 - Treatment on demand
 - Care triaged based on who needs it the most
 - Not “fired” for having symptoms of their disease (i.e., relapse)
 - Encouraged to go on medications
 - Offered a menu of treatment options
- 

Stigma and Addiction

- Stigma top reason for not accessing treatment
 - 22 million Americans with substance use disorder
 - Only 10% access treatment
- Stigma associated with poor mental and physical health among people who use drugs
- WHO study of 18 most stigmatized social problems in 14 countries:
 - Drug addiction ranked number 1
 - Alcohol addiction ranked number 4

Center for Behavioral Health Statistics and Quality. (2015). Behavioral health trends in the United States: Results from the 2014 National Survey on Drug Use and Health (HHS Publication N. SMA 15-4927, NSDUH Series H-50).

Room R, et al. Cross-cultural views on stigma valuation parity and societal attitudes towards disability, in TB Ustun, Schatterji, JE Birkenbach, RT Trotter II, R Room, and J Rehm et al. Eds), Disability and Culture: Universalism and diversity, 2001; 247-291, Seattle, WA: Hofgrebe&Huber.

Ahem J, et al. Stigma, discrimination and the health of illicit drug users. Drug Alcohol Depend. 2007. May 11; 88(2-3): 188-96.

What is Stigma?

- Attribute, behavior, or condition that is socially discrediting
- Two main factors influence stigma:
 - Cause and Controllability
- Stigma decreases when:
 - “It’s not his fault”
 - “She can’t help it”

Despite evidence for genetics and brain changes, stigma is pervasive...

Power of Language

Breast Cancer

Suffers
Afflicted
Endures
Survivor
Fighter
Victim *Patient*

Substance Use Disorder

Abuse Abuser
Misuse
Junkie Lush
Addict
Dirty
Clean

Stop Talking Dirty

- Abuse: “Wicked act or practice, a shameful thing, a violation of decency”
- Associated with behavior such as rape (sexual abuse), domestic violence, and child molestation
- Professionals more likely to view patient as deserving of punishment if described as a “substance abuser”

Types of Stigma for Addiction

- Stigma from within
 - Blame self, feel hopeless
- Stigma from recovery community
 - Medications vs. abstinence
- Stigma from clinicians
 - Belief that treatment is ineffective
- Stigma from outside
 - Choice vs. disease

Impact of Stigma

- Erodes confidence that addiction is a valid and treatable health condition
- Barrier to jobs, housing, relationships, medical care
- Deters public from wanting to pay for treatment, allows insurers to restrict coverage
- Stops people from seeking help



Break the Silence

- “There is no simple solution. On the most basic level, stigma prevention involves people speaking out. There is power in people telling their stories. Perceptions can change. Attitudes can shift. Behaviors can be modified. Knowledge can be increased.”



Take-Home Points

- Addiction is a **chronic medical disease**, a disease of the brain (NOT a sign of moral weakness or failure)
- Most people with addiction, once connected to the appropriate treatment & recovery services, **GET BETTER**
- **Stigma** towards people with addiction acts as a **barrier to care**.
- More addiction prevention and treatment strategies are needed.
- Addiction is costly but preventable.
- **MAT SAVES LIVES.**



ProjectECHO

Addiction Medicine –
Wednesday @ 12:00 PM CST



Addiction Medicine TeleECHO



Get expert addiction specialist knowledge in a virtual learning network with OSU Center for Health Sciences addiction medicine ECHO team.

The curriculum is designed to expand expertise in treating substance use disorders in the primary care setting.

SCHEDULE

Every Wednesday from Noon - 1:00 p.m. To Join this ECHO session registration is a one-time requirement. Once registered, you will receive an ECHO participant guide with more information.

[REGISTER NOW](#)

Thank You!



Questions?

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Addiction References

- American Society of Addiction Medicine (ASAM)
- Centers for Disease Control and Prevention (CDC)
- Center for Mindfulness, Umass Medical School
- Harm Reduction Coalition (HRC)
- National Institute of Drug Abuse (NIDA)
- Providers' Clinical Support System for MAT (PCSS-MAT)*
- The National Center on Addiction and Substance Abuse*
- Substance Abuse and Mental Health Service Administration (SAMSHA)
- U.S. Surgeon General's Report 2016

