

For Educational Use Only

When Enough is Enough:
Disrupting the Reward and
Addiction Process

Nhat Nguyen, MSW, CAADC

Learning Objectives

- Addiction process as a response to reward circuitry
- Biopsychosocial disease model
- Intervention approaches and other resources

For Educational Use Only



For Educational Use Only



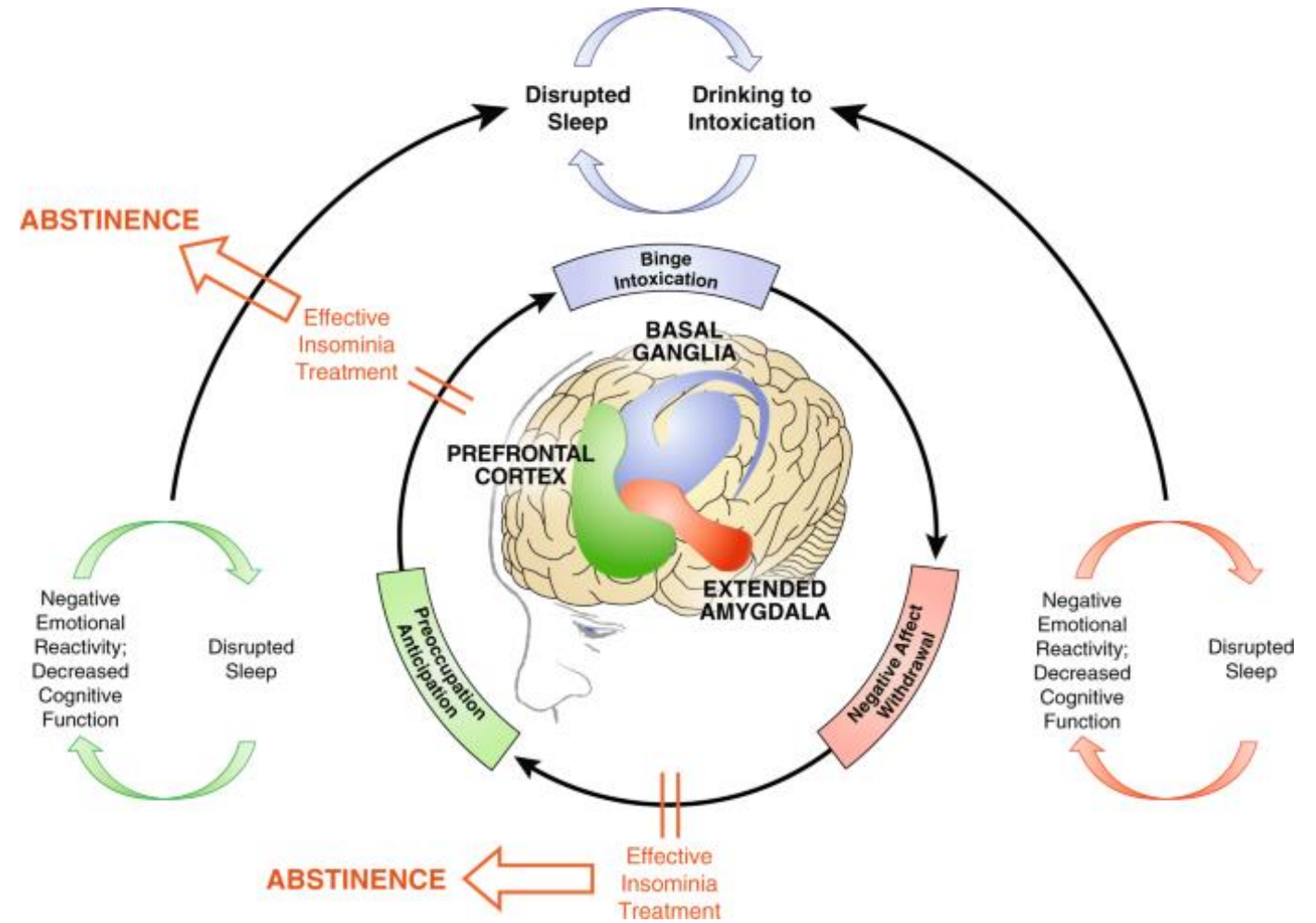
For Educational Use Only



Addiction, a definition

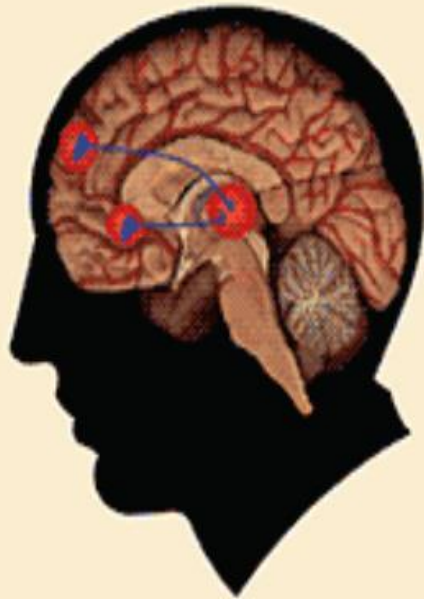
- Primary, chronic disease of brain reward, motivation, memory and related circuitry
- Individual pathological pursuing reward and/or relief by substance use and other behavior
- Without treatment or engagement in recovery activities, addiction is progressive and can result in disability or premature death

A Circuitry of Addiction

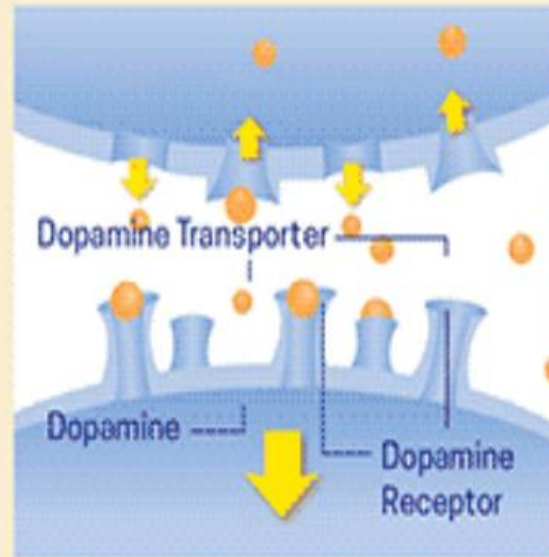


Some drugs target the brain's pleasure center

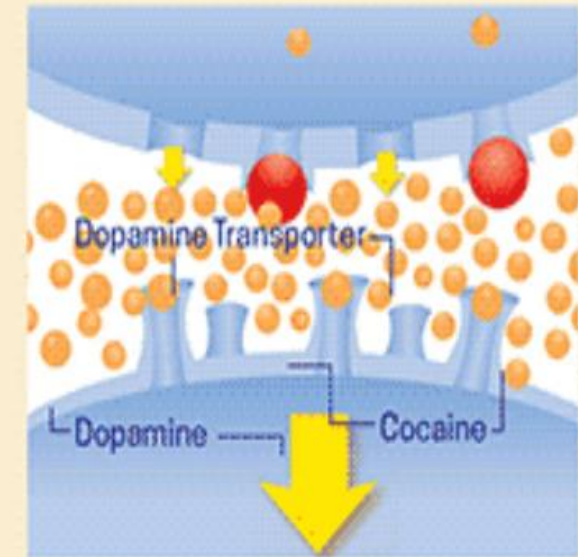
Brain reward (dopamine pathways)



How drugs can increase dopamine



While eating food



While using cocaine

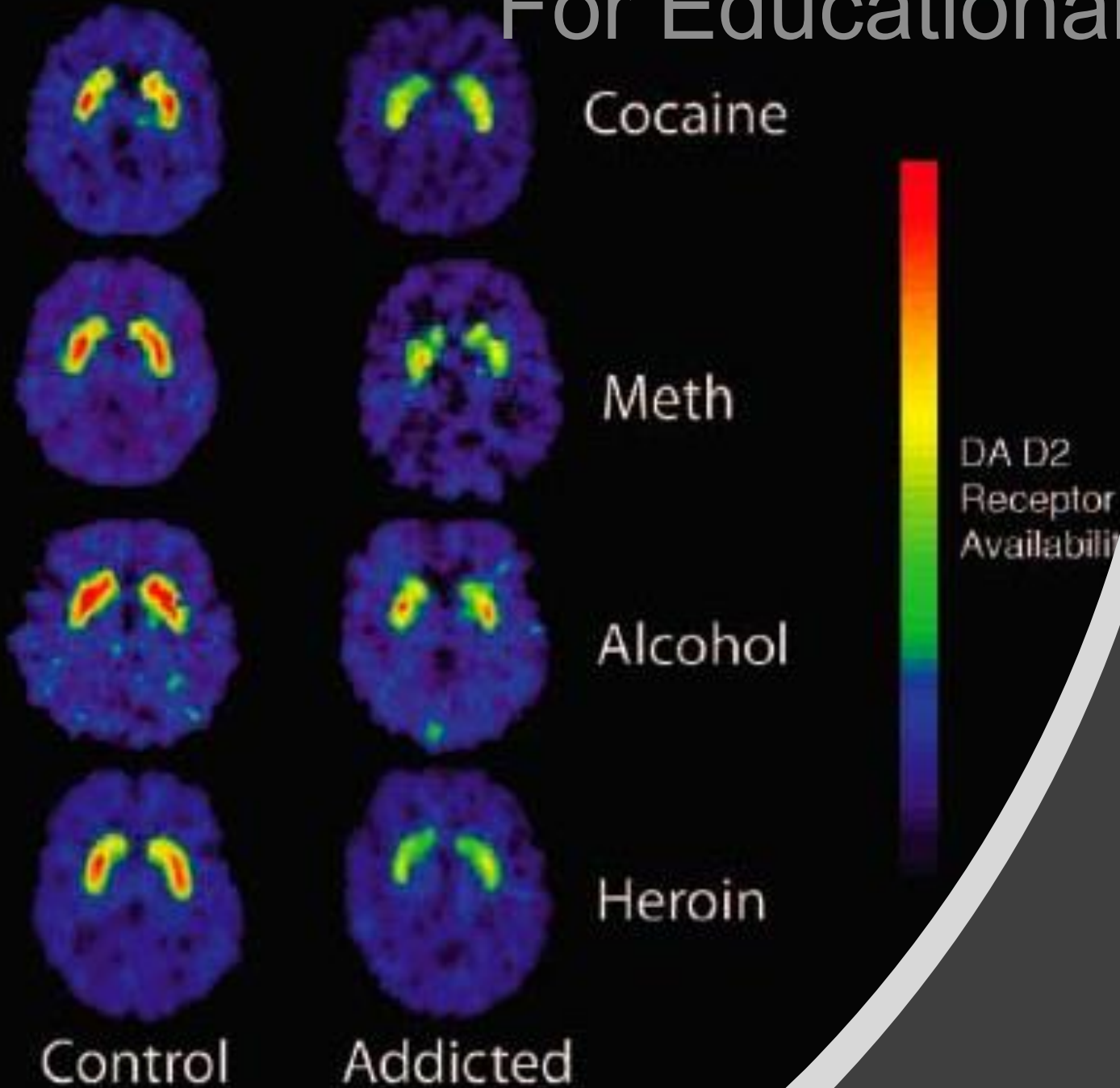
These brain circuits are important for natural rewards such as food, music, and sex.

Typically, dopamine increases in response to natural rewards such as food. When cocaine is taken, dopamine increases are exaggerated, and communication is denied.

Characteristics of Addiction

- Inability to consistently abstain
- Impairment in behavioral control
- Craving
- Diminished recognition of significant problems with one's behavior and interpersonal relationships
- Dysfunctional emotional response

For Educational Use Only



How do alcohol and drugs work in our brain

For Educational Use Only

Diagnostic Statistical Manual Criteria

Impaired control

Social impairment

Risky use

Pharmacological criteria

For Educational Use Only

Impaired Control

Take substance in larger amount



Over a longer period of time than originally intended



Spend a great deal of time obtaining, using and recovery from effects of substances



Intense desire or urge to use

Social Impairment

Failure to fulfill major role obligations at work, school, or home

Continued use despite negative consequences to social and interpersonal issues

Giving up or reduced important social, occupational, or recreational activities

For Educational Use Only

Risky Use

Continued use despite physical safety

Continued use despite physical or psychological problems

Failed to abstain from use

For Educational Use Only

Pharmacological Criteria

- Tolerance
- Withdrawal

Alcohol Use Disorder

Intoxication

- Slurred speech
- Incoordination
- Unsteady gait
- Nystagmus
- Impairment in attention or memory
- Stupor or coma

Withdrawal

- Autonomic hyperactivity (e.g. sweating or pulse rate greater than 100 bpm)
- Increased hand tremor
- Insomnia
- Nausea or vomiting
- Transient visual, tactile, or auditory hallucinations or illusions
- Psychomotor agitation
- Anxiety
- Generalized tonic-clonic seizures (grand mal seizures)

Alcohol Use Disorder in the US

- **Adult (ages 18+):** According to the 2015 NSDUH, 15.1 million adults ages 18 and older (6.2%) had AUD.
 - This includes 9.8 million men (8.4% men) and 5.3 million women (4.2% women)
 - About 6.7% adults who had AUD in the past year received treatment
 - This includes 7.4% males and 5.4% females
- **Youth (ages 12-17):** According to the 2015 NSDUH, an estimate 623,000 adolescent ages 12-17 (2.5%) had AUD
 - This includes 5.1% males and 5.3% females
- **Underage drinking:** About 7.7 million people ages 12-20 (20.3%) reported drinking alcohol in the past month (19.8% males and 20.8% females)

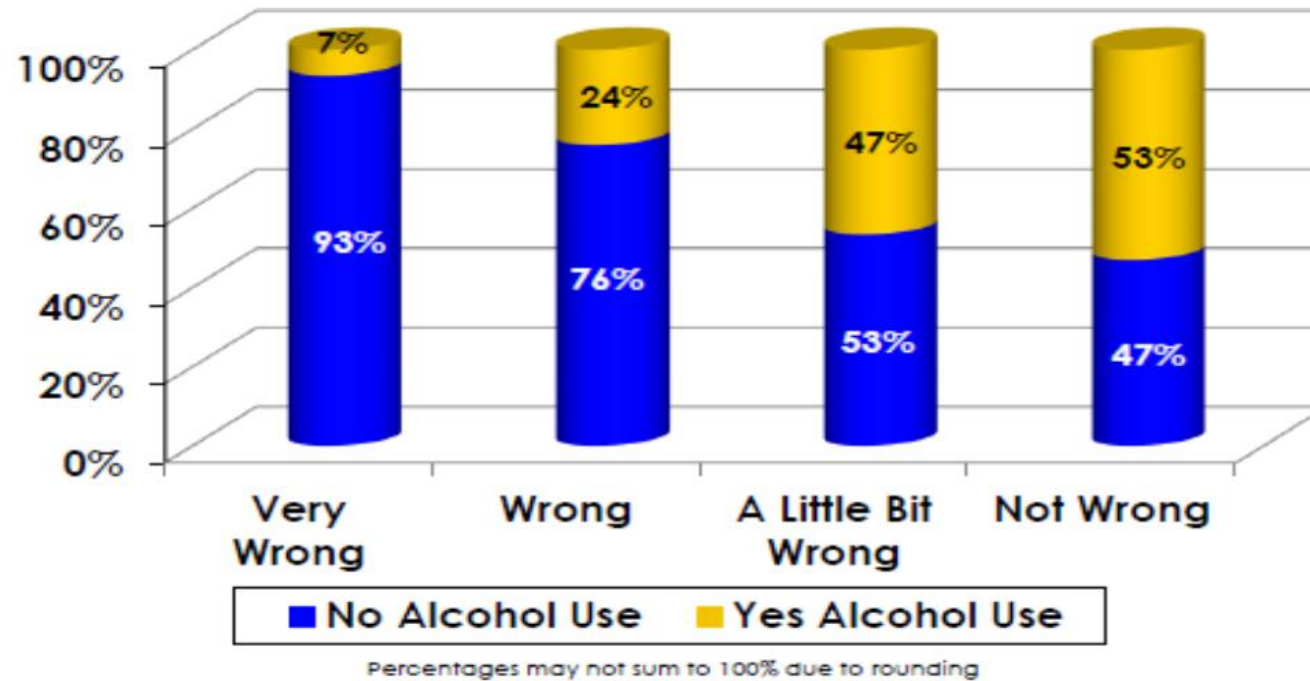
Alcohol- related Deaths in the US

- An estimate 88,000 people (62,000 men and 26,000 women) die from alcohol-related causes annually, making alcohol the third leading preventable cause of death in the United States
- The first is tobacco, and the second is poor diet and physical inactivity
- In 2014, alcohol-impaired driving fatalities accounted for 9,967 deaths (31% of overall driving fatalities)

FCPS Youth Survey 2017- 2018

- Alcohol Use in past 30 days
 - 8th grade 3.5% (vs. 8.0%)
 - 10th grade 14.1% (vs. 19.7%)
 - 12th grade 29.5% (vs. 33.2%)
 - 16.7% females vs. 14.3 males
- Alcohol Binge
 - 8th grade 1.0% (vs. 3.7%)
 - 10th grade 5.5% (vs. 9.8%)
 - 12th grade 14.1% (vs. 16.6%)
 - 6.9% females vs. 6.6% males

Parental Perception and Alcohol Use Behavior



Cannabis Use Disorder

Intoxication

- Conjunctival injection
- Increased appetite
- Dry mouth
- Tachycardia

Withdrawal

- Irritability, anger, or aggression
- Nervousness or anxiety
- Sleep difficulty (e.g. insomnia, disturbing dreams)
- Decreased appetite or weight loss
- Restlessness
- Depressed mood

At least one of the following symptoms:

- Abdominal pain
- Shakiness/tremors
- Sweating
- Fever
- Chills
- Headaches

FCPS Youth Survey 2017- 2018

Marijuana Use in the past 30 days

- 8th grade 1.9% (vs. 5.5%)
- 10th grade 8.8% (vs. 15.7%)
- 12th grade 17.9% (vs. 22.9%)
- 8.3% females vs. 10.4% males

Synthetic Marijuana

- 8th grade 1.4%
- 10th grade 2.4%
- 12 grade 2.7%
- 2.2% females vs. 2.1% males

Inhalant Use Disorder

Intoxication

- Dizziness
- Nystagmus
- Incoordination
- Slurred speech
- Unsteady gait
- Lethargy
- Depressed reflexes
- Psychomotor retardation
- Tremors
- Generalized muscle weakness

- Blurred vision or diplopia
- Stupor or coma
- Euphoria
- Sudden sniffing death
- Unconsciousness
- Anoxia
- Death
- Cardiac arrhythmia or arrest

Withdrawal

- May develop persisting medical and neurological problems

FCPS Youth Survey 2017- 2018

Inhalant Use in the past 30 days

- 8th grade 2.1%
- 10th grade 1.0%
- 12th grade 0.7%
- 1.1% females vs. 1.3% males
- US survey (2002-2006)
 - Annual average of 593,000 teens age 12-17 had used inhalant for the first time in the year before they took the survey
 - One state in the US averaged more than 3,800 emergency room visits and 450 hospitalizations a year due to inhalant poisonings (2008)
 - By 8th grade, one in 5 students will have used inhalants
 - 2007 inhalants were the most frequently used substance by 12-13 years old
 - Sudden Sniffing Death Syndrome – 22% of first-time users have died

Opioid Use Disorder

Intoxication

- Pupillary constriction
- Pupillary dilation
 - Due to anoxia from severe overdose
- Drowsiness or coma
- Slurred speech
- Impairment in attention or memory

Withdrawal

- Dysphoric mood
- Nausea or vomiting
- Muscle aches
- Lacrimation or rhinorrhea
- Pupillary dilation, piloerection or sweating
- Diarrhea
- Yawning
- Fever
- Insomnia

FCPS Youth Survey 2017- 2018

Painkillers or prescription medication use in the past 30 days

- 8th grade 5.7%
- 10th grade 6.5%
- 12th grade 8.1%
- 7.0% females vs. 6.4% males

Phencyclidine Use Disorder

Intoxication

- Vertical or horizontal nystagmus
- Hypertension or tachycardia
- Numbness or diminished responsiveness to pain
- Ataxia
- Dysarthria
- Muscle rigidity
- Withdrawal
- Elevated body temperature
- Seizures
- Muscle twitching
- Agitation
- Hallucinations
- Acidosis
- Long-term effects
 - Weight loss
 - Speech impairment
 - Impaired cognitive function

Other Hallucinogen Use Disorder

Intoxication

- Pupillary dilation
- Tachycardia
- Sweating
- Palpitations
- Blurring of vision
- Tremors
- Incoordination

Withdrawal

- Re-experiencing of one or more of the perceptual symptoms that were experienced while intoxicated
- Geometric hallucinations
- False perceptions of movement in peripheral vision fields
- Flashes of color
- Intensified colors
- Trails of images of moving objects
- Positive after-image
- Halos around objects
- Macropsia
- Micropsia

For Educational Use Only

Sedative, Hypnotic, or Anxiolytic Use Disorder

Intoxication

- Slurred speech
- Incoordination
- Unsteady gait
- Nystagmus
- Impairment in cognition (e.g. attention, memory)
- Stupor or coma

Withdrawal

- Automatic hyperactivity
 - Sweating
 - Pulse > 100 bpm
- Insomnia
- Nausea or vomiting
- Transient visual, tactile, or auditory hallucination or illusions
- Psychomotor agitation
- Anxiety
- Generalized tonic-clonic seizures (Grand Mal seizure)

Stimulant Use Disorder

Intoxication

- Tachycardia or bradycardia
- Pupillary dilation
- Elevated or lowered blood pressure
- Perspiration or chills
- Nausea or vomiting
- Evidence of weight loss
- Psychomotor agitation or retardation
- Muscular weakness, respiratory depression, chest pain, or cardiac arrhythmias
- Confusion, seizures, dyskinesias, dystonia or coma

Withdrawal

- Fatigue
- Vivid, unpleasant dreams
- Insomnia or hypersomnia
- Increased appetite
- Psychomotor retardation or agitation

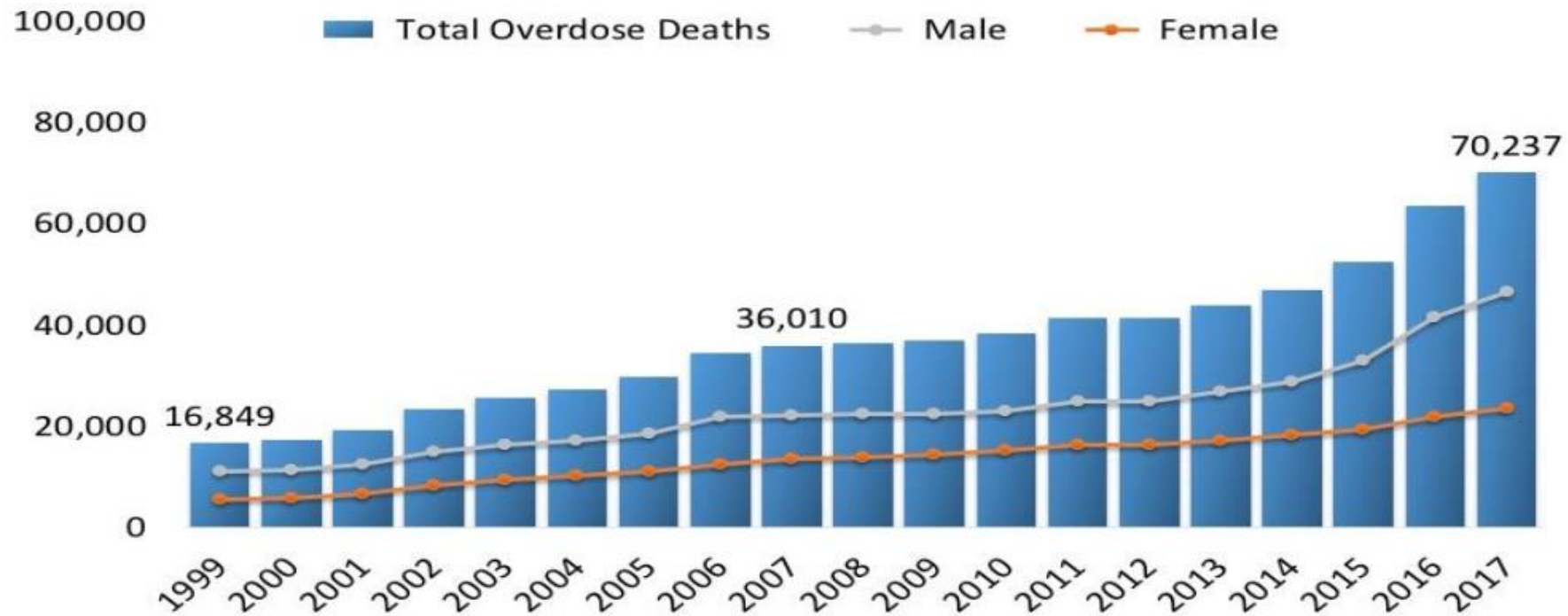
Other Substance Use Disorder

- Anabolic steroids
- Amyl-, butyl- or isobutyl-nitrites (sample – amphetamines)
- Antihistamines (e.g. Benadryl – depressants)
- Antiparkinsonian medications (e.g. Cogentin – hallucinogens)
- Betel nut (amphetamines)
- Cathinone (e.g. Knat – amphetamines)
- Cortisol
- Kava (depressants)
- Kratom (amphetamine – or opioid-like)
- Nitrous oxides (e.g. laughing gas – depressants)
- Nonsteroidal anti-inflammatory drugs

Cost of Substance Use Disorder

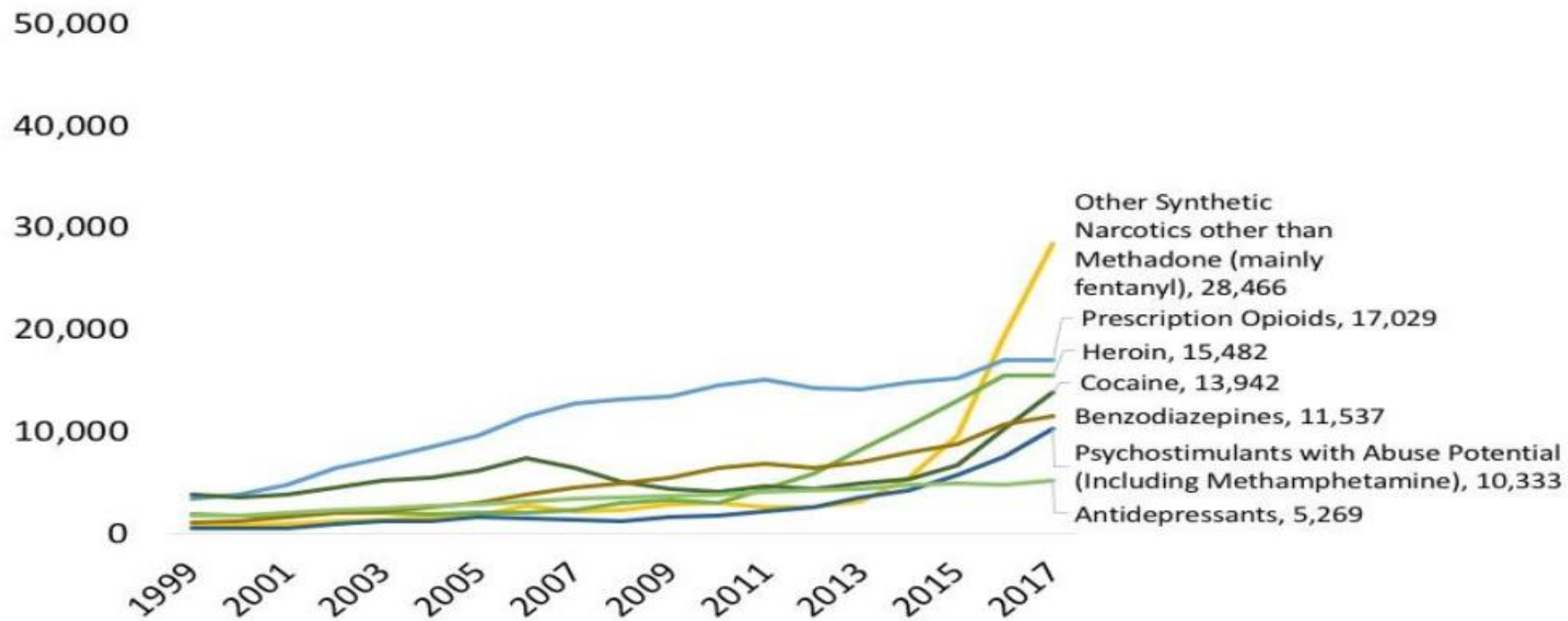
- Abuse of tobacco, alcohol, and illicit drugs is costly
- More than \$740 billion annually
 - Associated with crime, lost of work productivity and health care
- In 2010, alcohol misuse cost the US \$249 billion

Figure 1. National Drug Overdose Deaths Number Among All Ages, by Gender, 1999-2017



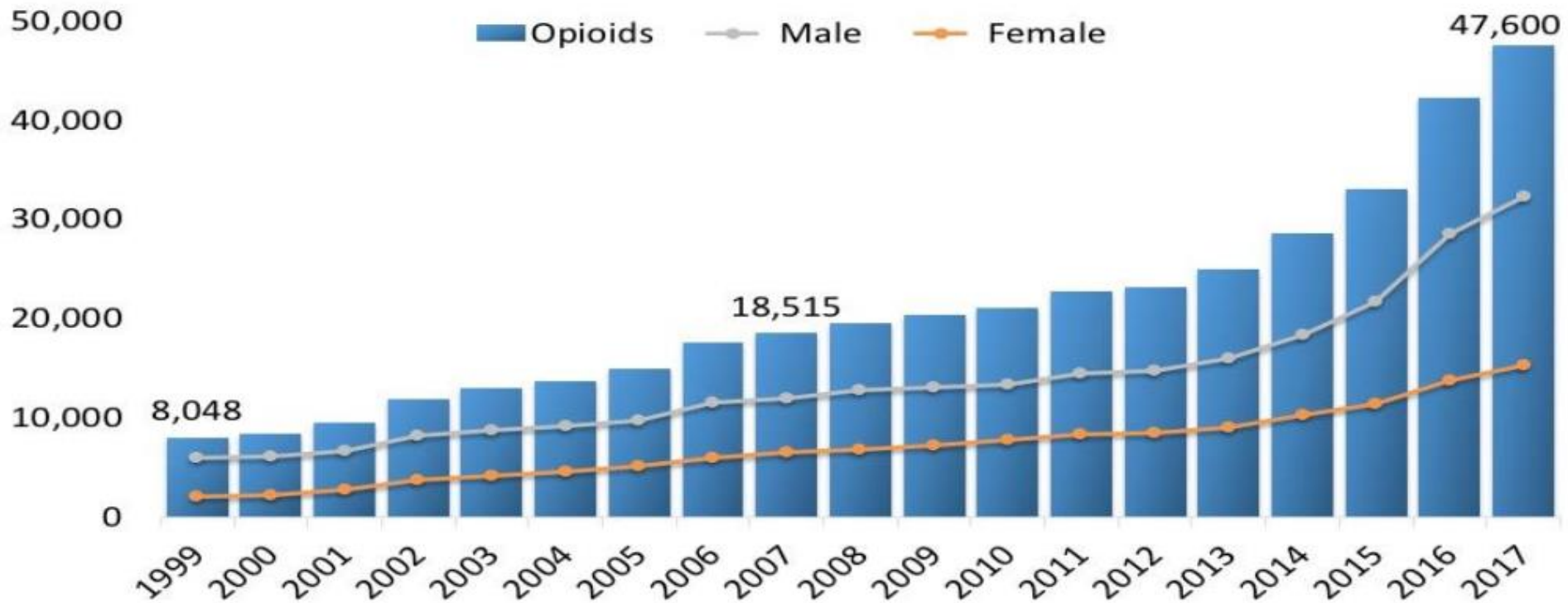
Source: : Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

Figure 2. National Drug Overdose Deaths
Number Among All Ages, 1999-2017



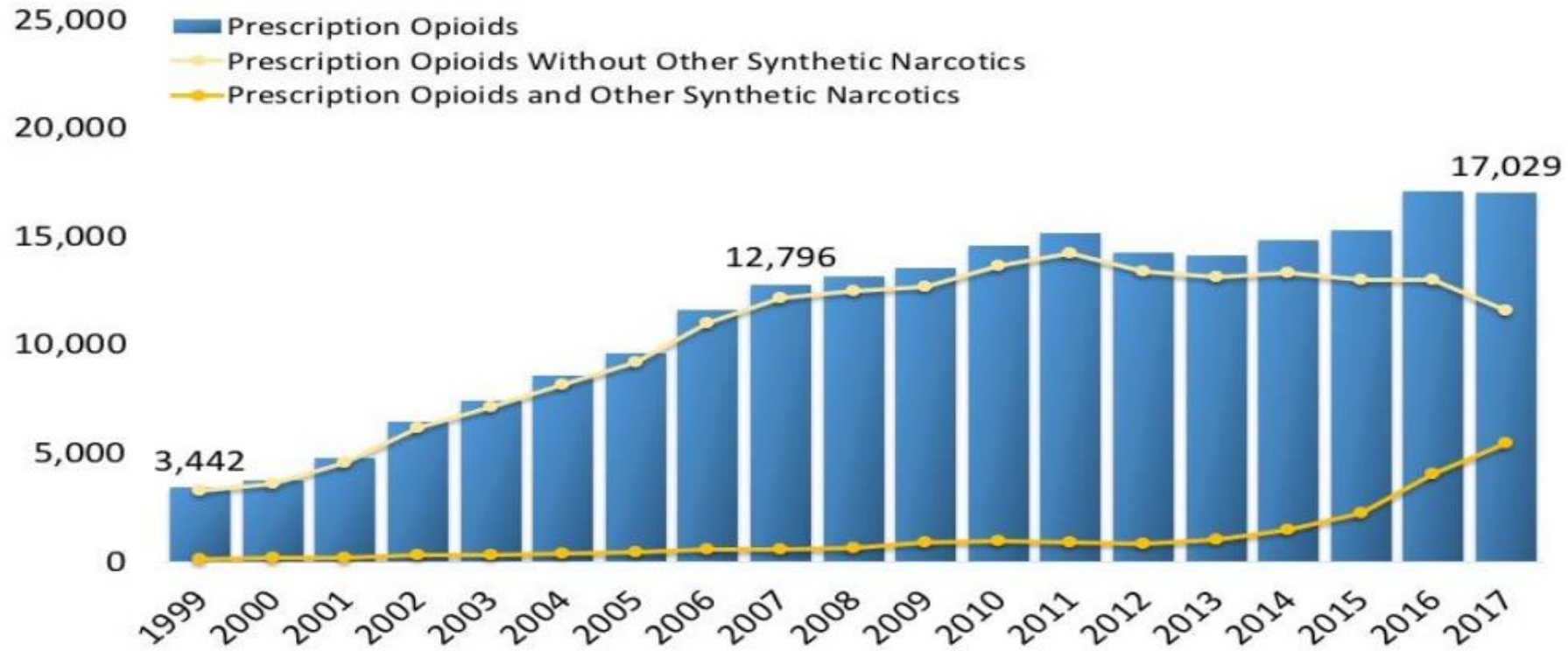
Source: : Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

Figure 3. National Drug Overdose Deaths Involving Any Opioid, Number Among All Ages, by Gender, 1999-2017



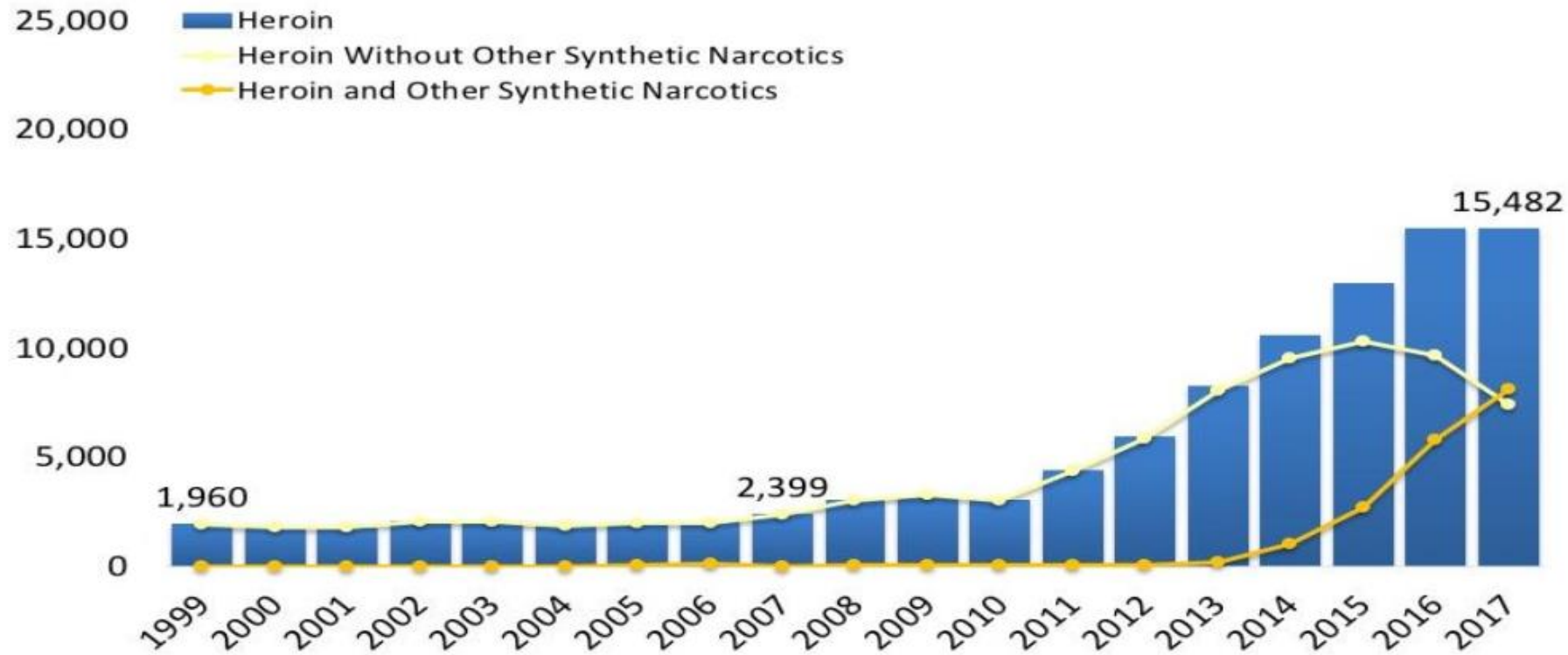
Source: : Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

Figure 4. **National Drug Overdose Deaths Involving Prescription Opioids, Number Among All Ages, 1999-2017**



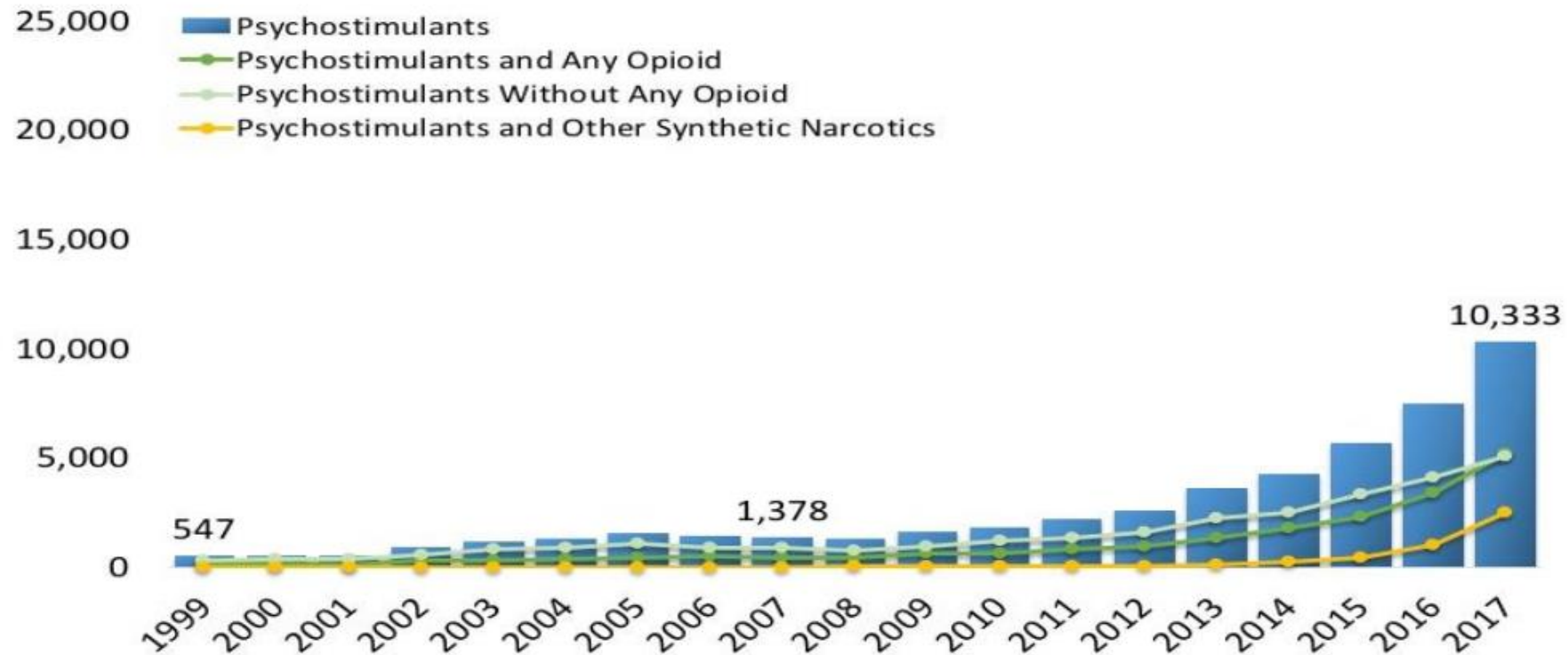
Source: : Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

Figure 5. **National Drug Overdose Deaths Involving Heroin**
Number Among All Ages, 1999-2017



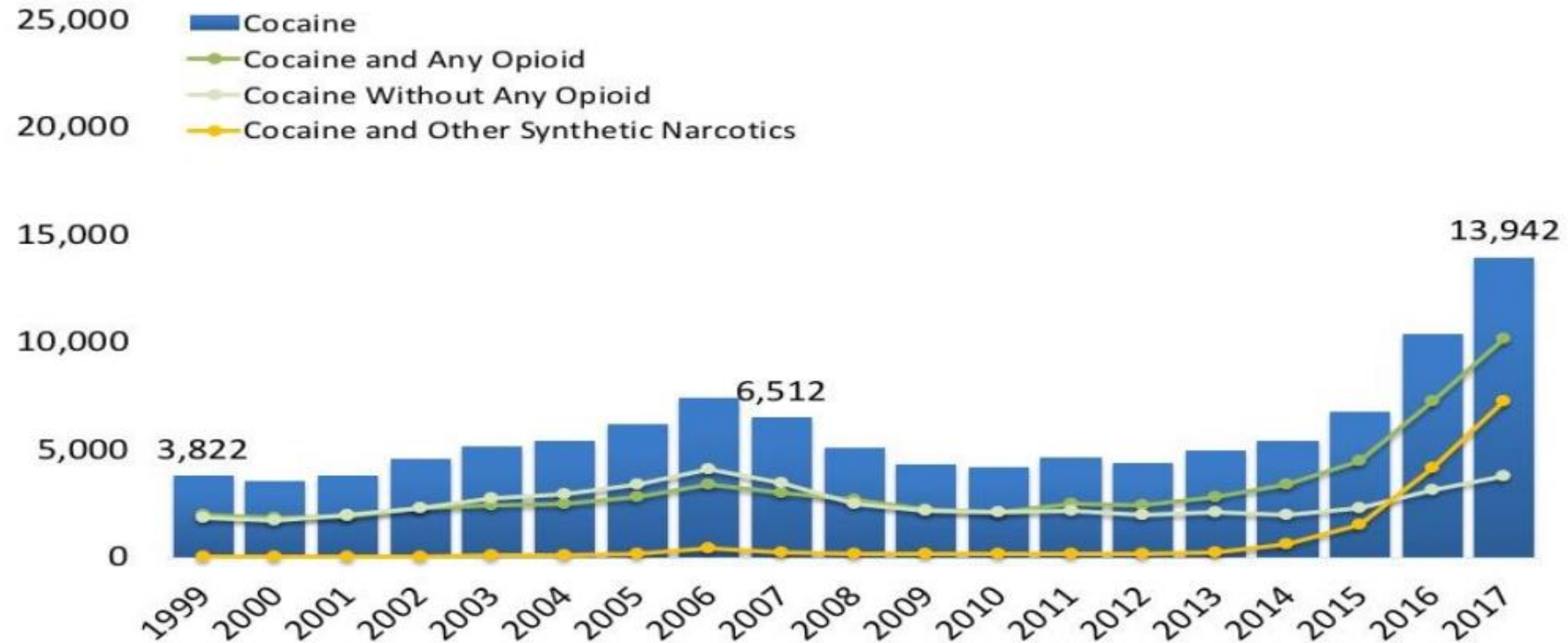
Source: : Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

Figure 6. National Drug Overdose Deaths Involving Psychostimulants With Abuse Potential (Including Methamphetamine), by Opioid Involvement
Number Among All Ages, 1999-2017



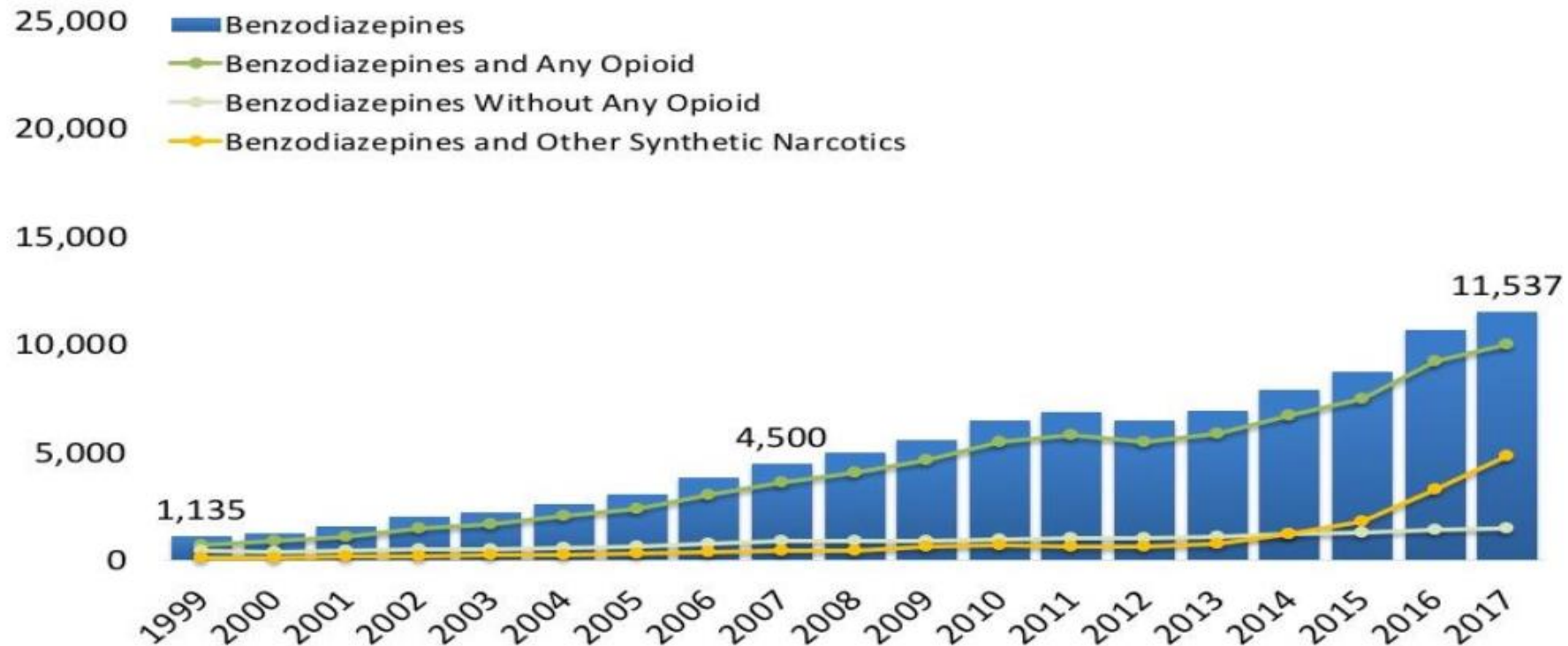
Source: : Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

Figure 7. National Drug Overdose Deaths Involving Cocaine, by Opioid Involvement
Number Among All Ages, 1999-2017



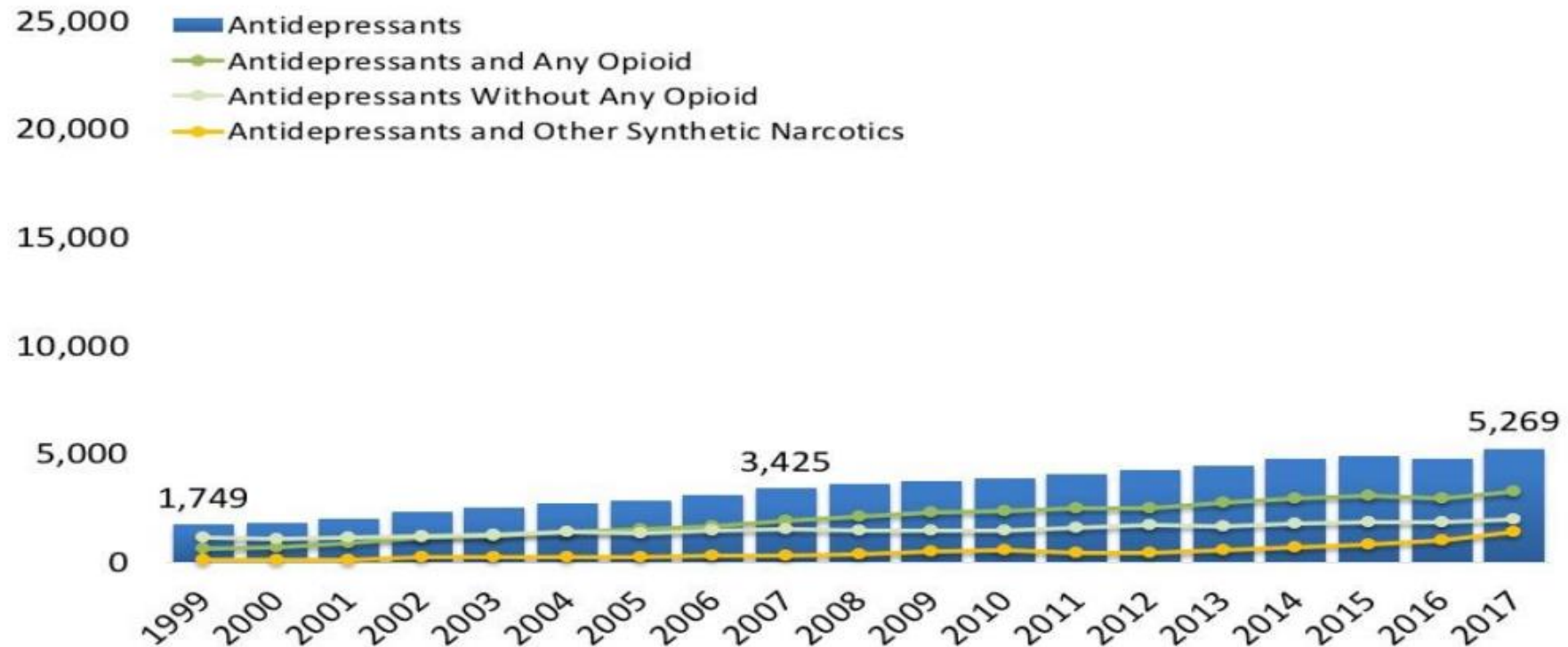
Source: : Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

Figure 8. National Drug Overdose Deaths Involving Benzodiazepines, by Opioid Involvement, Number Among All Ages, 1999-2017



Source: : Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

Figure 9. National Drug Overdose Deaths Involving Antidepressants, by Opioid Involvement, Number Among All Ages, 1999-2017



Source: : Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

For Educational Use Only

Is there a
cure?

Short answer: NO

Disrupting the Circuitry ABCs

Awareness

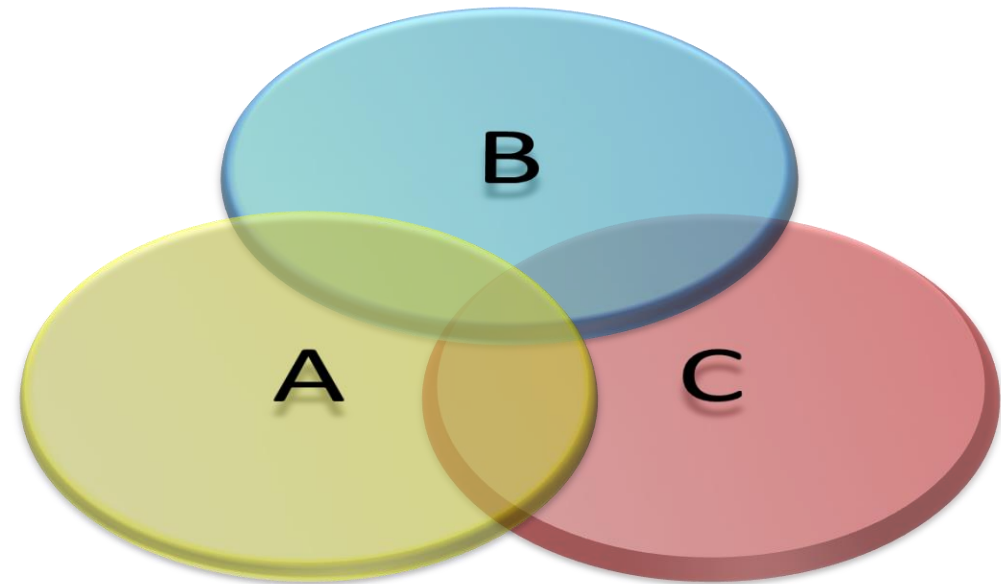
- Get the facts
- Being informed
- Know where to go to get help
- Be trained in REVIVE! Like you are in CPR

Being, not acting

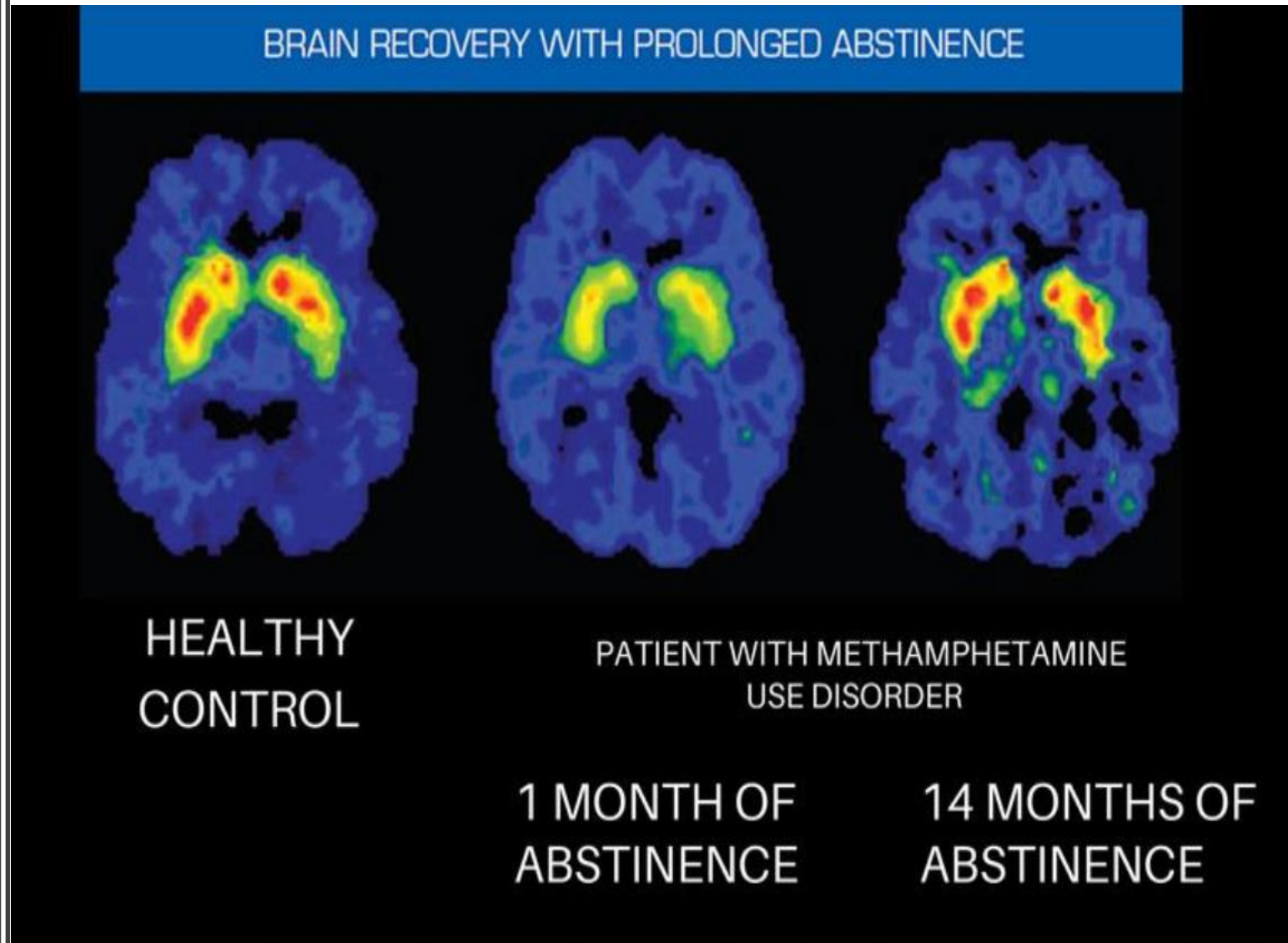
- Patient
- Persistent
- Parental

Caring Consequences

- Don't be afraid to impose consequences
- Love setting limits vs. Setting limits with love



Disrupting the Circuitry



Disrupting the Circuitry

Motivations

- Healthy Lifestyle Changes

Prevention

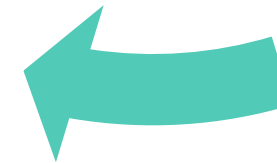
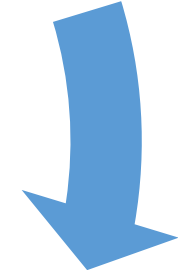
- Education
- SBIRT
- Attending to primary care

Support System

- Sober Network
- AA/NA and Ala-Non

Intervention

- ASAM 1.0-4.0
- Medication-Assisted Treatment
- Co-occurring Disorder



Community Services Board Resources and Services

- Adult Partial Hospitalization
- Case Management & Support Coordination Services
- Crisis Care Program
- Detoxification/Diversion Outreach Team
- Diversion First
- Emergency/Mobile Crisis Unit
- Employment and Day Support Services
- Forensics and Jail-based Services
- Intensive Community Treatment Services
- Intensive Outpatient Treatment
- Medication-Assisted Treatment
- PACT (Program for Assertive Community Treatment)
- PATH (Homeless Outreach)
- PORT (Peer Overdose Response Team)
- Residential Treatment and Support Services
- Substance Abuse Outreach, Monitoring and Engagement (SOME) Program
- Wellness, Health Promotion and Prevention
- Youth and Family Services

Where to Start

- Entry and Referral Services
 - 703-383-8500
 - TTY 711
- Detox Center
 - 703-502-7000
 - TTY 703-322-9080
- Emergency Services
 - 703-207-7720
 - 703-573-5679
 - TTY 711
- Website:
<https://www.fairfaxcounty.gov/community-services-board/>
- Email: wwwcsb@fairfaxcounty.gov

CSB Centers

- Merrifield Center
 - 8221 Willow Oaks Corporate Dr.
 - Fairfax, 22031
- Chantilly Center
 - 14150 Parkeast Cir., #200
 - Chantilly, 20151
- Gartlan Center
 - 8119 Holland Rd.
 - Alexandria, 22306
- Northwest Center
 - 1850 Cameron Glen Dr., #600
 - Reston, 20190