

Neurobiology and Substance Use

Social Workers on the Front Line of the Opioid Epidemic
Learning Collaborative

Today's Presenter



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Greetings and Nick's Contact Info

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Some points to consider

- It's not your fault.
- Switch out addiction for...
- How/why does social work and social workers fit in?

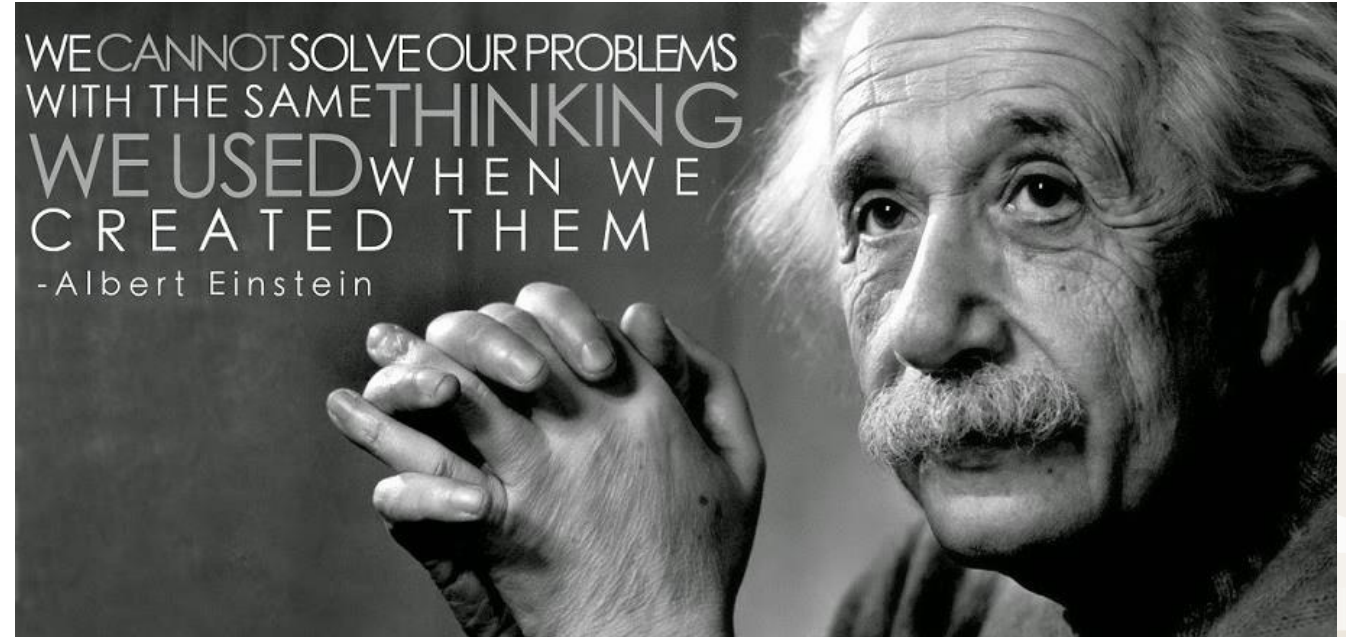


Objectives

- Discuss and explore addiction as a biological, behavioral neurobiological chronic health condition
- Explore the impact of antiquated understanding of addiction in terms of treatment approaches in healthcare and policy implications
- Connect evidenced based policy and treatment approaches to the science of addiction
- Why SBIRT and MAT can help change how we treat substance use disorders



Changing the ways we think about addiction

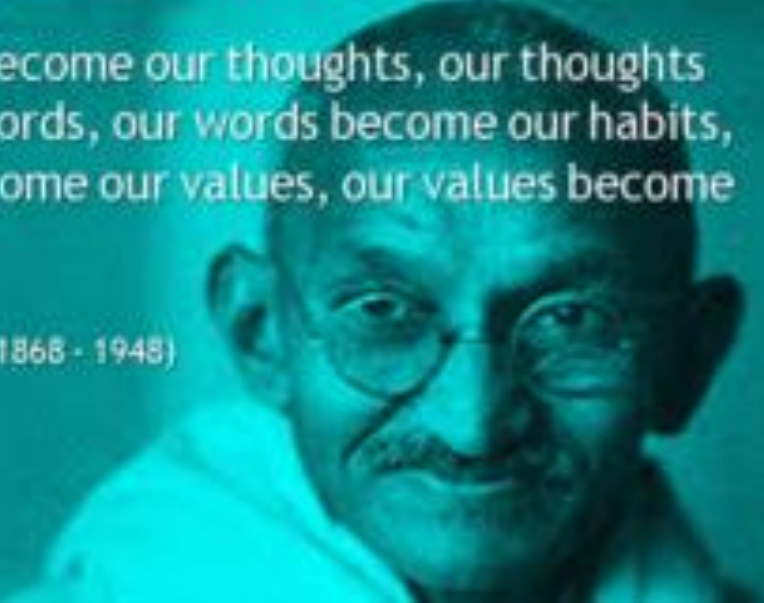


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Beliefs

“Our beliefs become our thoughts, our thoughts become our words, our words become our habits, our habits become our values, our values become our destiny.”

- Mahatma Gandhi (1868 - 1948)



Perceptions

All our knowledge has its origins in our perceptions.

Leonardo da Vinci



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Bias, Stigma, and Discrimination

- Stigma refers to **negative stereotypes**
- Discrimination is the **behavior that results** from the negative stereotype
- Discrimination in this case means treating someone less favorably than someone else because he or she has a disability

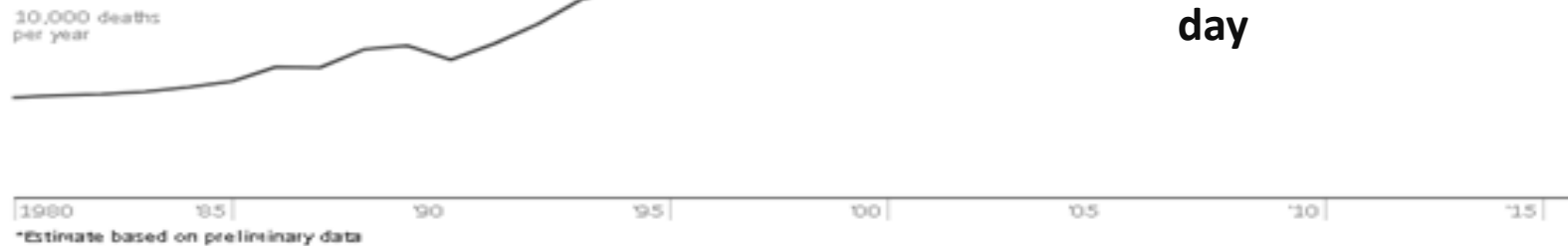


Bias, Stigma, and Discrimination

- Stigma is defined as an **attribute, behavior, or condition** that is socially discrediting.
 - No other conditions are more stigmatized than addiction.
- Stigma is influenced by two main factors: cause and controllability.
 - **Cause**, to the extent people believe an individual is ***not responsible*** for the attribute, behavior, or condition (i.e., “It’s not their fault”), stigma is diminished.
 - **Controllability**, to the extent that people believe that the attribute, behavior, or condition is ***beyond the individual’s personal control*** (i.e., “they can’t help it”), stigma is lessened.
- Continued stigma is because many people still perceive addiction as a “choice” and that addicted individuals really can control it (“**why can’t they just stop?**”)

“There were almost 64,000 drug overdose deaths in 2016, the largest annual jump ever recorded in the United States.”
Nearly 64,000 people died of a drug overdose in 2016, a staggering 22% increase from the year prior
- According to the CDC

Drug overdose deaths, 1980 to 2016



2017: More than 72,000

59,000 to 65,000 people died from drug overdoses in the U.S. in 2016*

1972 Car Crash

1995 HIV

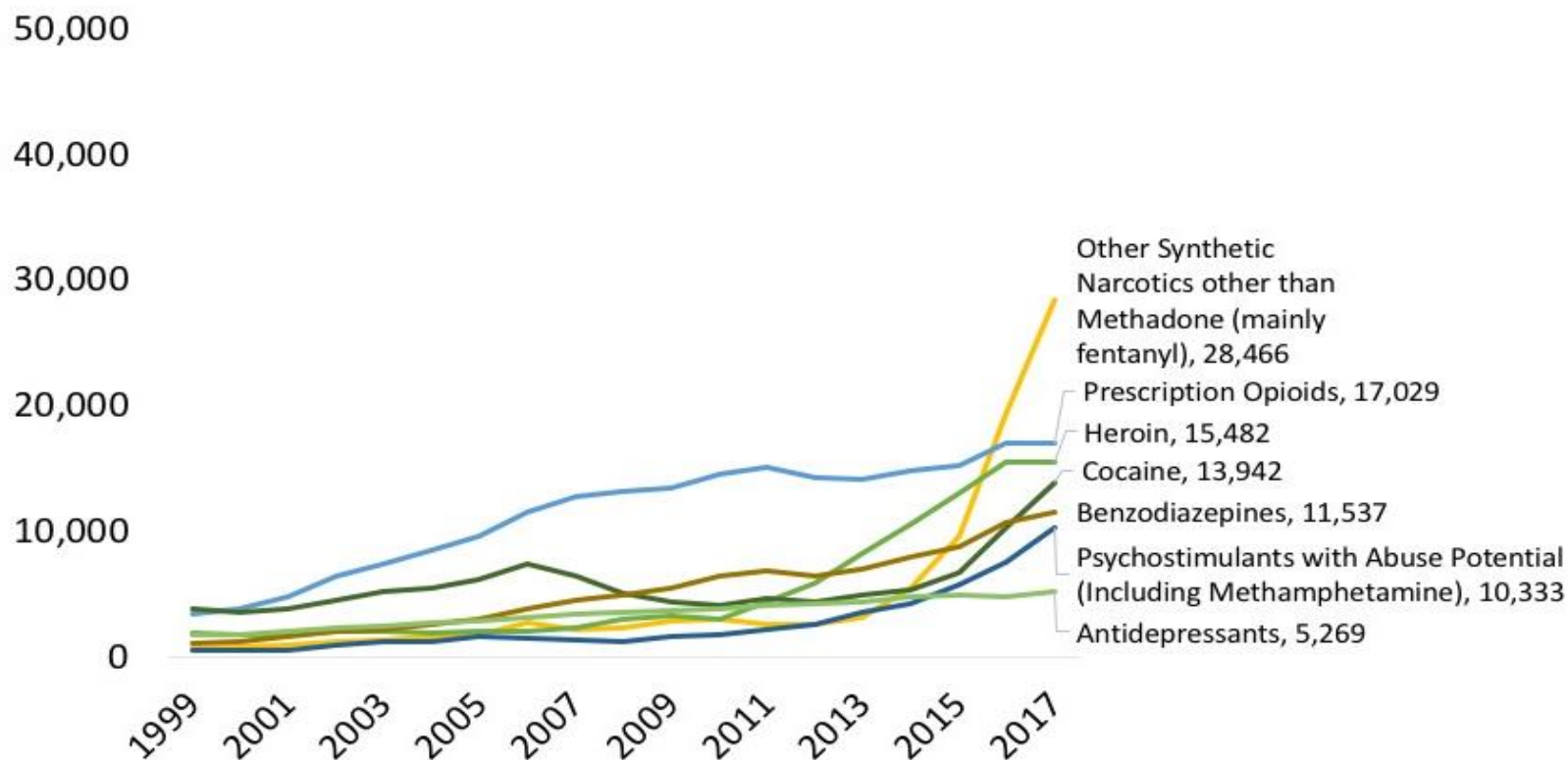
1993 Gun Deaths

Nearly two-thirds of 2016 deaths (66%) involved a prescription or illicit opioid

2018: 120 People die from overdose every day

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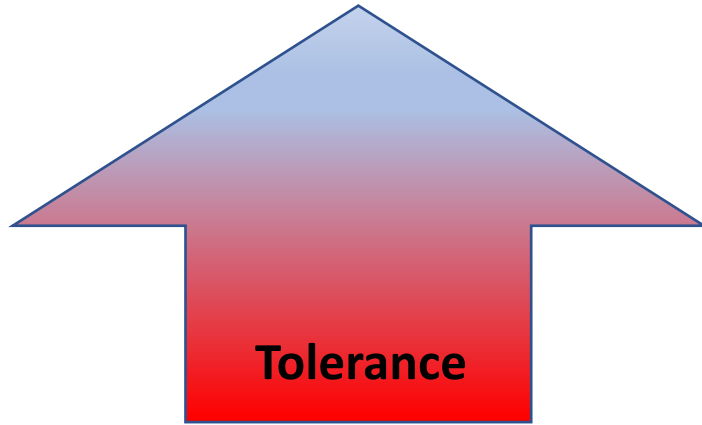
Figure 2. National Drug Overdose Deaths Number Among All Ages, 1999-2017



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

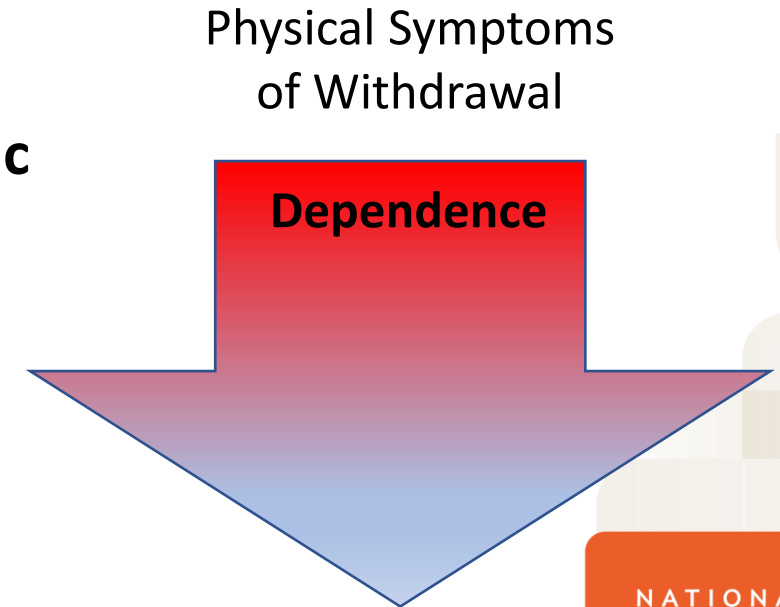


What makes opioids so (acutely) deadly?



Tolerance: Increased dosage needed to produce specific effect. Develops rapidly for CNS and respiratory depression.

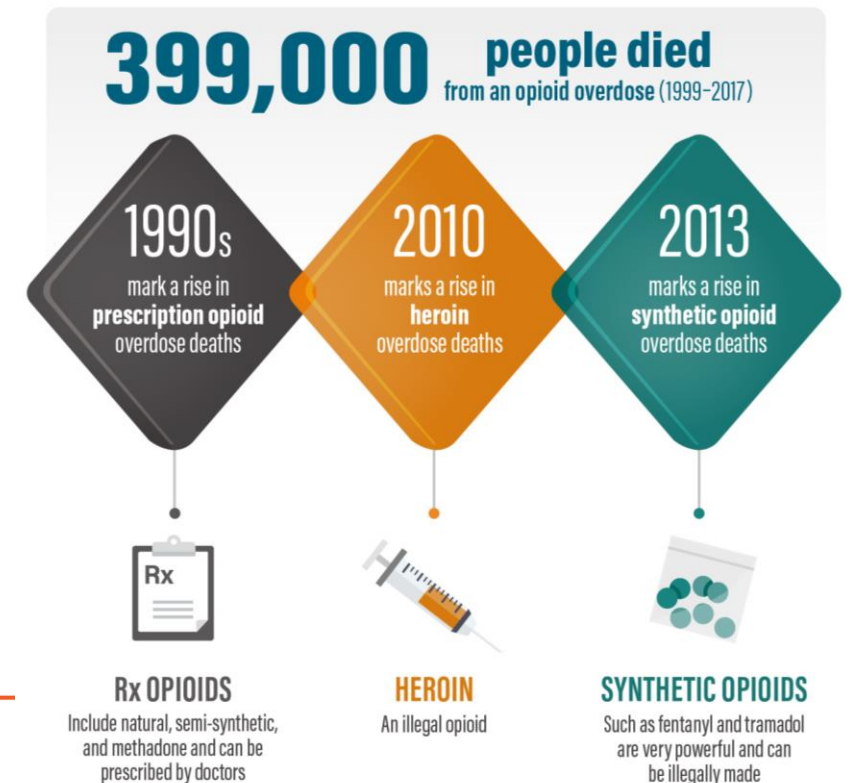
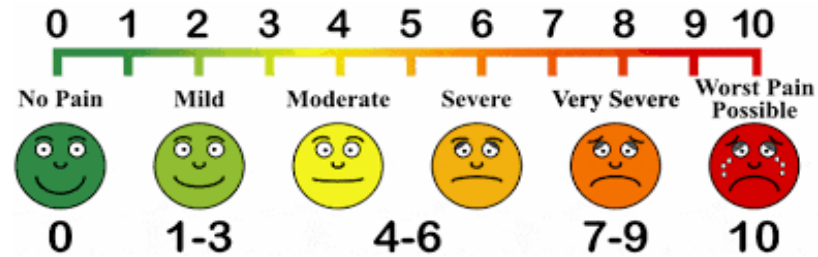
Tolerance and physical dependence are psychological adaptations to chronic opioid exposure.



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A History of the Opioid Crisis

- Harrison Act (1919-1935)
- Opioids myth: non-addictive
- Pain went untreated
- Pain as 5th vital sign
- Emergence of pill mills
- Greater availability of heroin
 - Since 2010, heroin overdose death rates have more than quadrupled.
- Leading cause of accidental death
 - People age 25-44 have the highest death rates.
- Medication Assisted Treatment (MAT)
- Prescription Drug Monitoring Program (PDMP) and morphine milligram equivalents (MME)
- Access to care remains at 10%

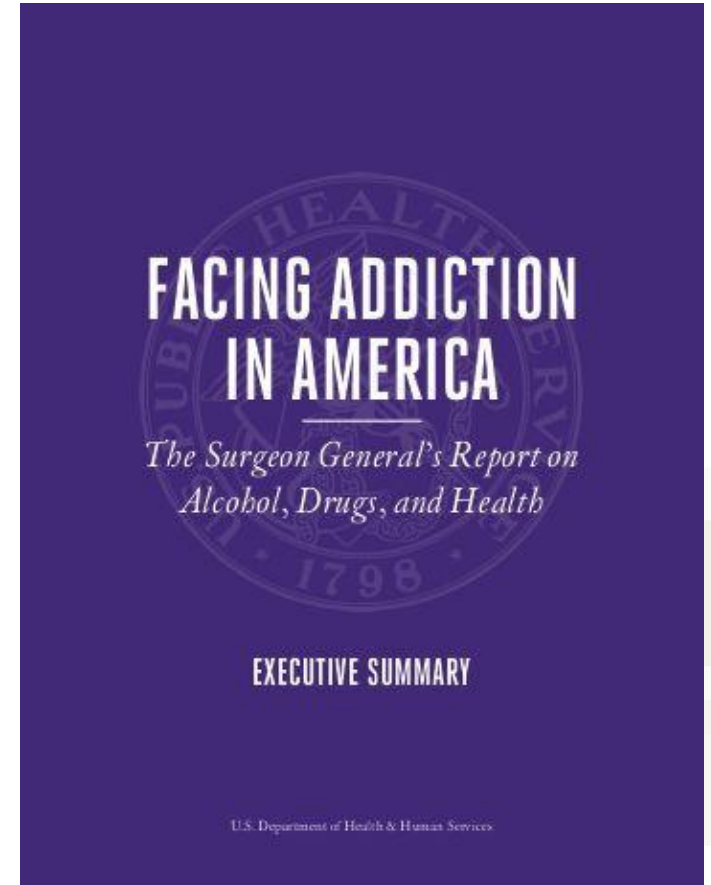
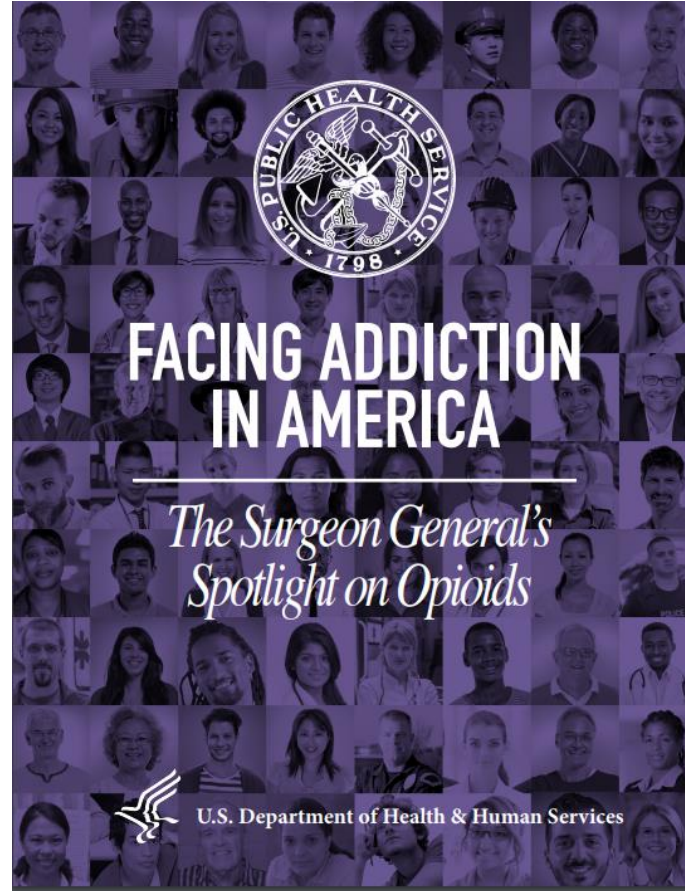
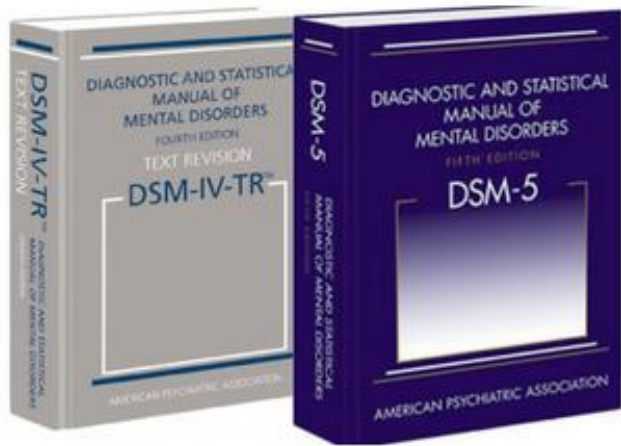


REVIEW ARTICLE

Dan L. Longo, M.D., *Editor*

Neurobiologic Advances from the Brain Disease Model of Addiction

Nora D. Volkow, M.D., George F. Koob, Ph.D., and A. Thomas McLellan, Ph.D.



No. Nope, it's not. This is a fried egg.



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Three Stages of Addiction

1. Binge and intoxication

2. Withdrawal and negative affect

3. Preoccupation and anticipation

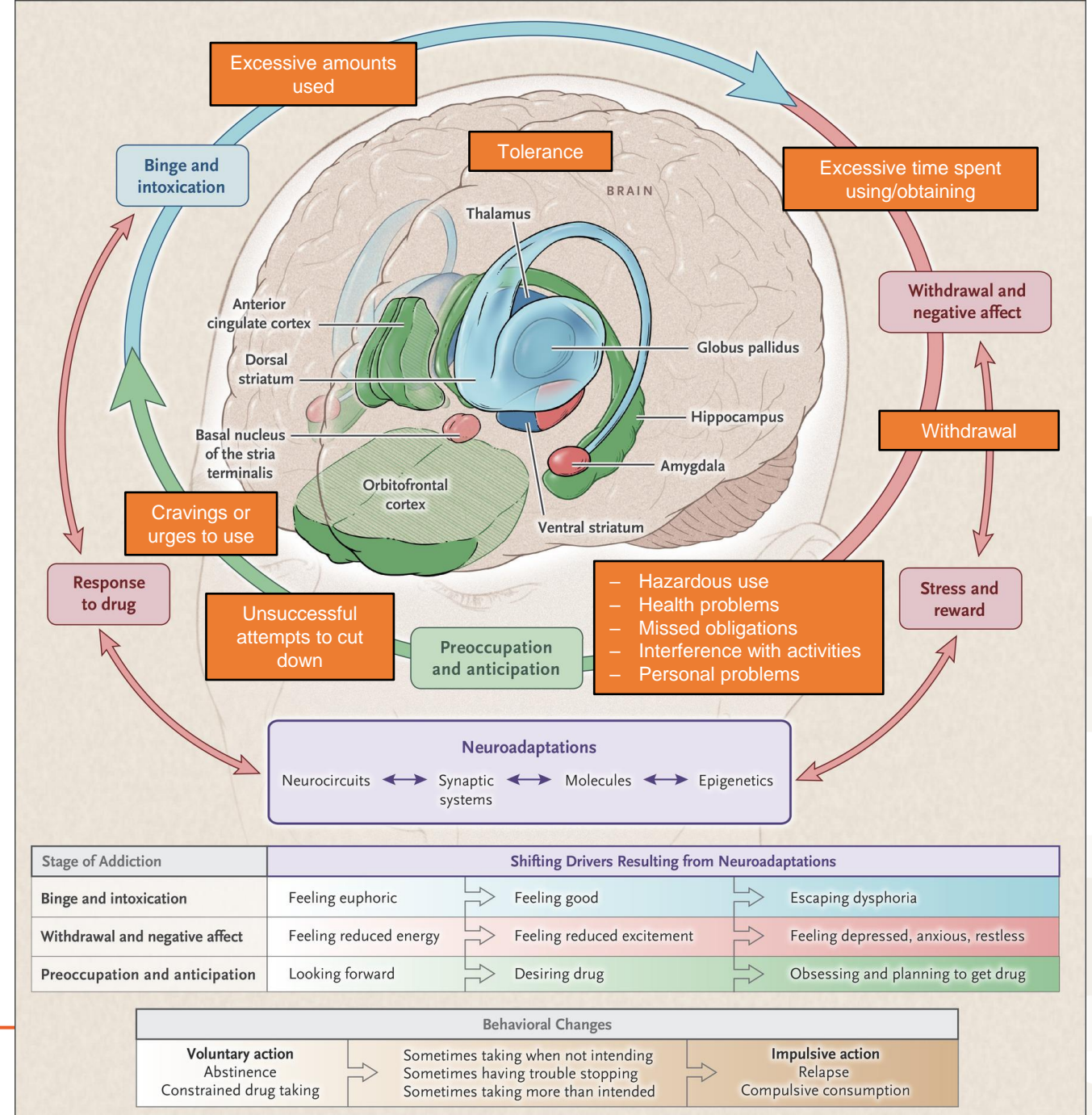
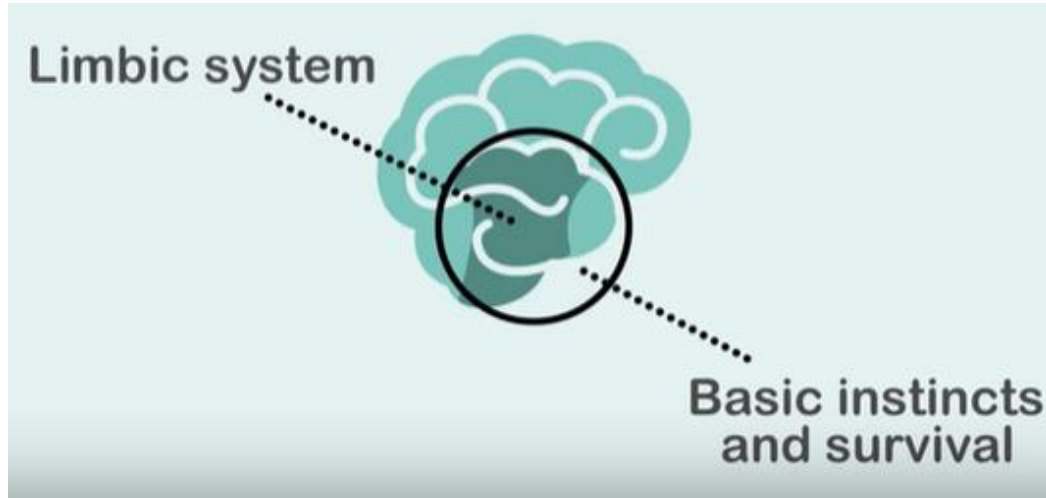
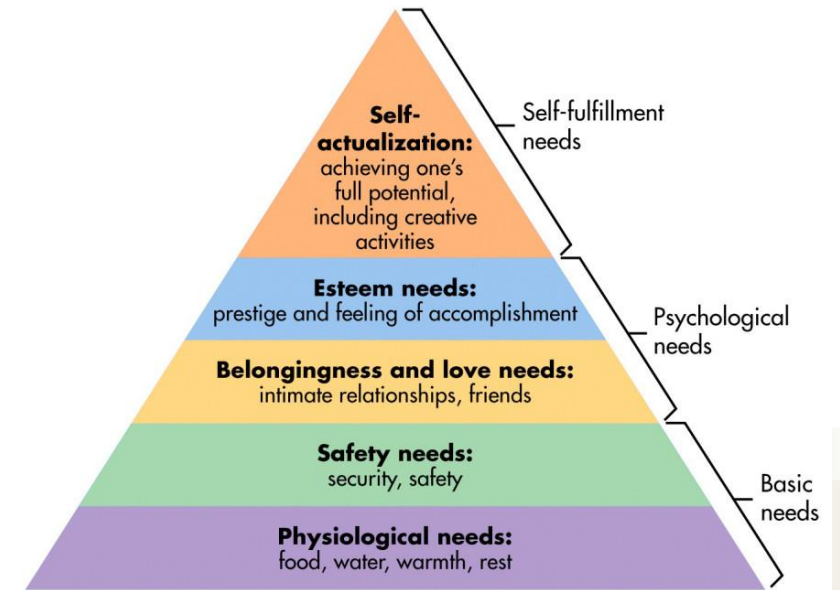


Figure 1. Stages of the Addiction Cycle

Limbic System – Our Survival Hardwiring



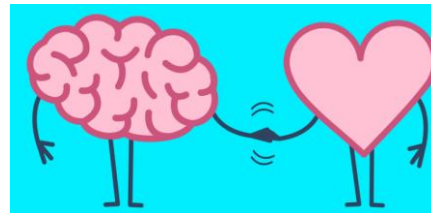
- Eat
- Drink
- Take care of kids
- Relationships
- Sex
- Shelter



☆☆ Dopamine ☆☆



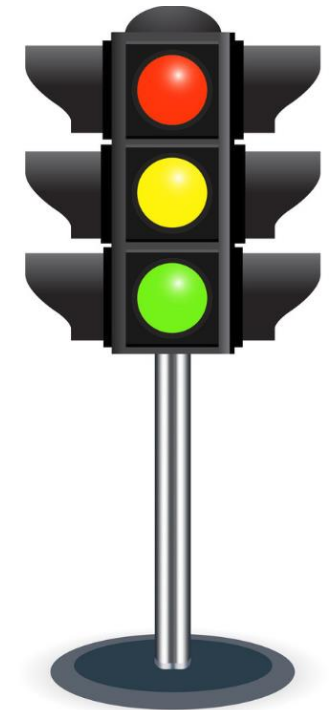
Amygdala and Hippocampus = Memory



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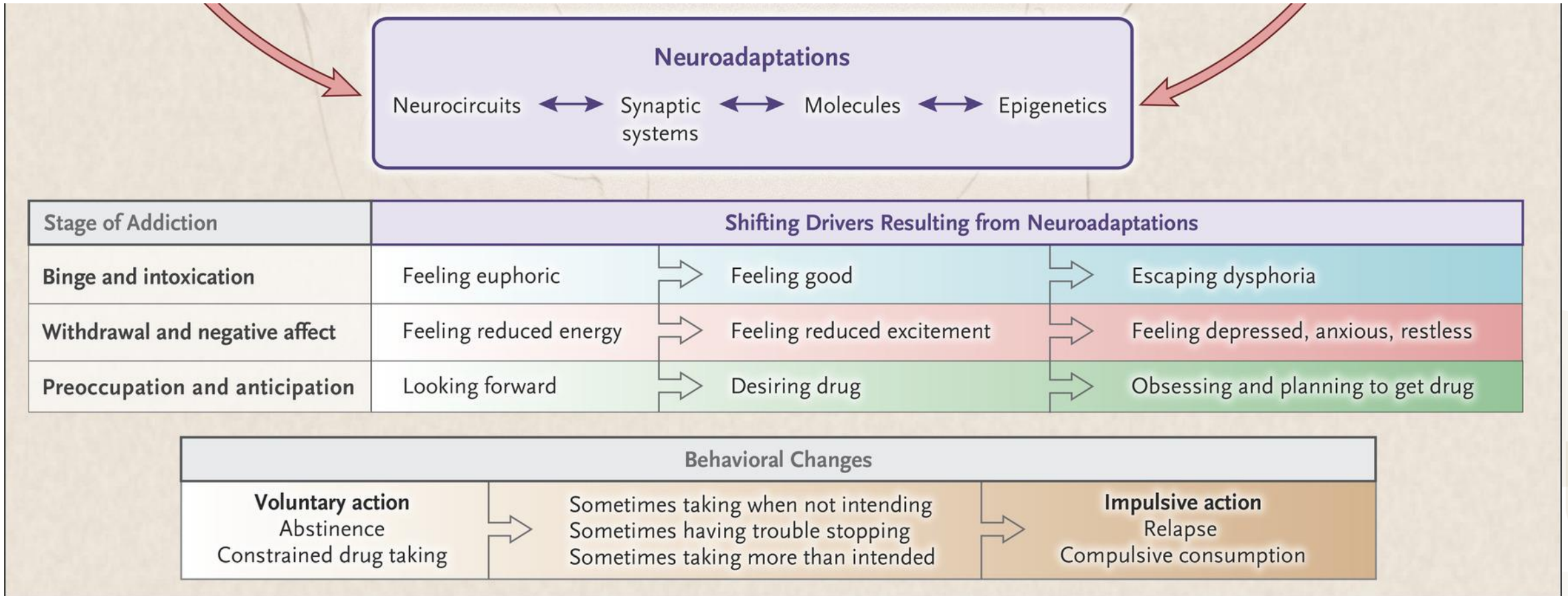
Pre-frontal Cortex

- Decision making and impulse control part of the brain
- Hijacks, usurps those primary drivers; I believe the need to survive is the drug



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Three Stages of Addiction



8 Steps Along the Pathway to Addiction



Step 1: Disruption



Addictive Substances begin to disrupt the function of the brain circuits involved in obtaining natural **rewards such as food and water**.

- Motivation
- Decision making
- Memory

Normal brain - the **mesolimbic dopamine pathway** allows a person to experience pleasure in response to stimuli such as food and social interactions, and therefore encourages and motivates an individual to seek out these stimuli.

All That and a Bag of
Chips.....

CRINKLE...CRINKLE
people, places, and things
associated with the reward.



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Step 2: Changes in the Systems

Addictive substances mimic, interfere (both) the brain's regulation of its natural chemicals - this **CHANGES** the **reward system**.

The primary need for survival is changing to the drug.



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Step 3: Changes to Cues and Triggers



Connections between **mesolimbic dopamine** and memory circuits enable a person to remember the **people, places, and things** associated with the reward.

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What are you thinking, feeling, experiencing, noticing, seeing? What is happening?



★ ★ Dopamine ★ ★

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Step 4: Activating at a Higher Level

Addicting substances activate mesolimbic dopamine pathways **more powerfully** than natural rewards.



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Step 5: What Goes Up, Must Come Down

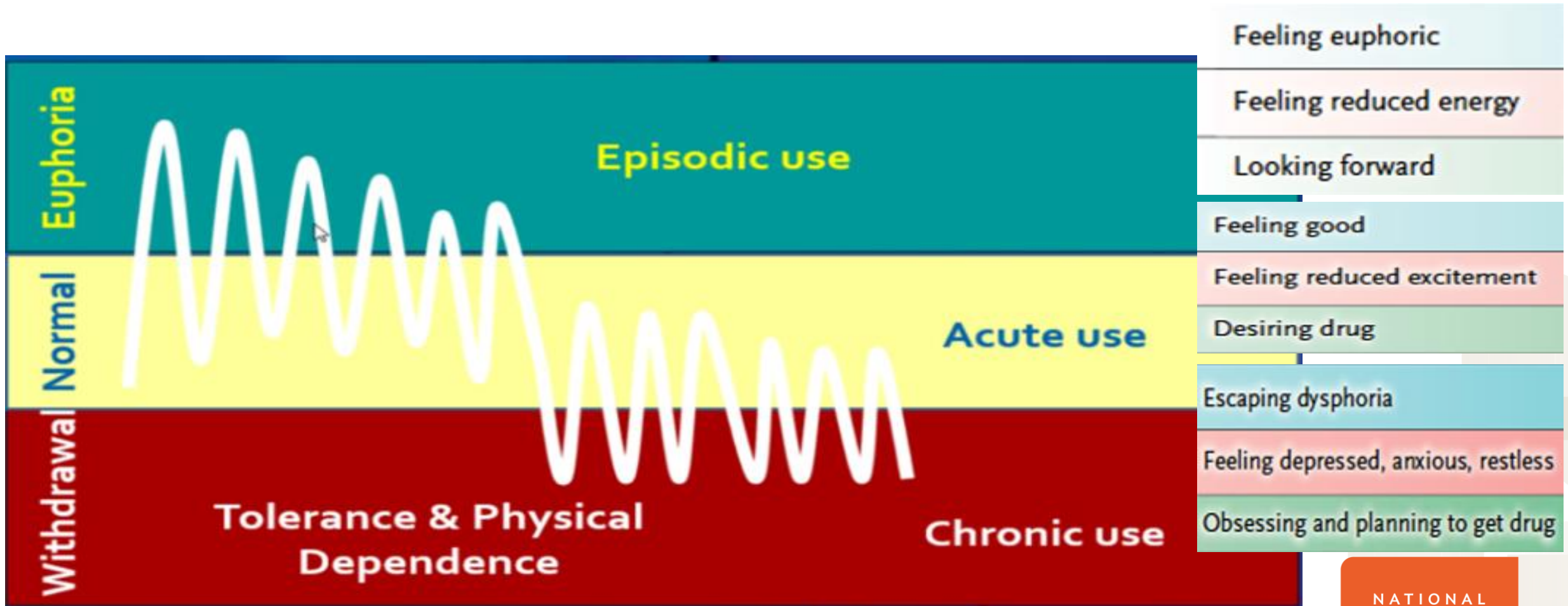
In patients with substance use disorder (SUD), the mesolimbic pathway responds to cues that addictive substances are available...

...while its response to the drug itself and to natural rewards diminishes.

“I need more of the drug to activate the same level of reward,” while brain tissue becomes increasingly damaged.



A Natural History of Opioid Use Disorder



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Step 6: Erosion of Control



Simultaneously, repeated substance use erodes the ability to exert inhibitory control.

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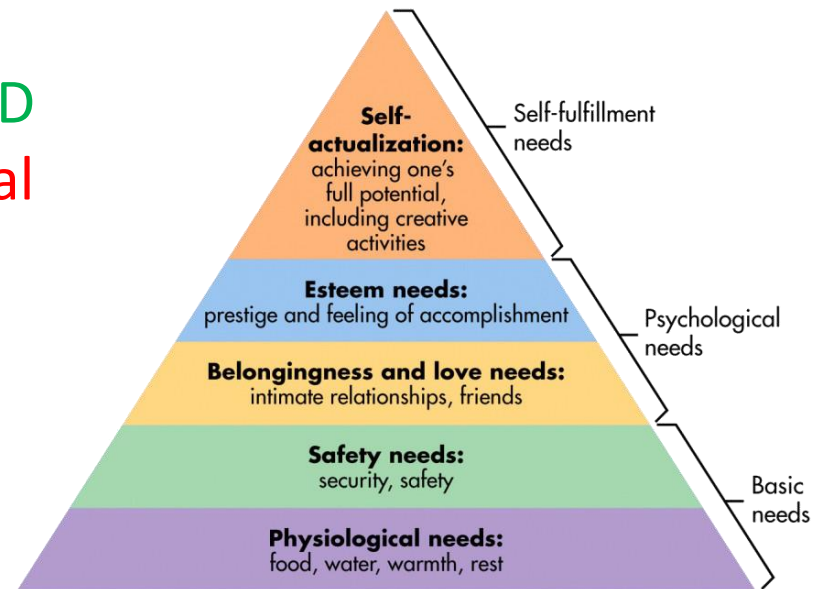
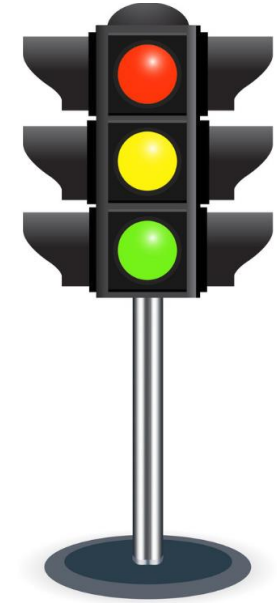
Go and Stop Circuits – Compulsion that DRIVES Behavior

Reward/Control Pathway = Two Parts – Gas and the Brake

- **GO** - survival driven (old brain)
- **STOP** - shuts down the do it more messages (new brain)

The altered brain chemistry from a SUD

- the **GO** circuits become overactive AND
- the **STOP** circuit becomes dysfunctional



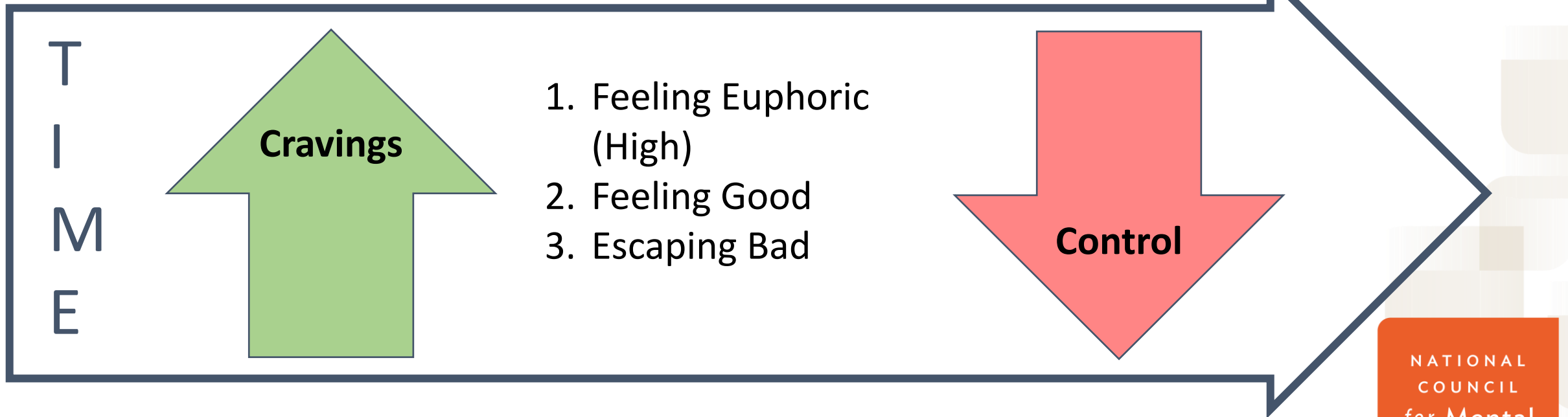
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Step 7: Time Both Increases and Decreases

Over time...

- substance-related cues become *more salient*, drug craving becomes *more compelling* AND
- the individual is *less able to inhibit impulses* to use substances... as the “high” experienced is diminishing



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Step 8: Erosion of Voluntary Control

This path leads to impairment in substance-related decision making that leads to many of the DSM-5 symptoms of a SUD.



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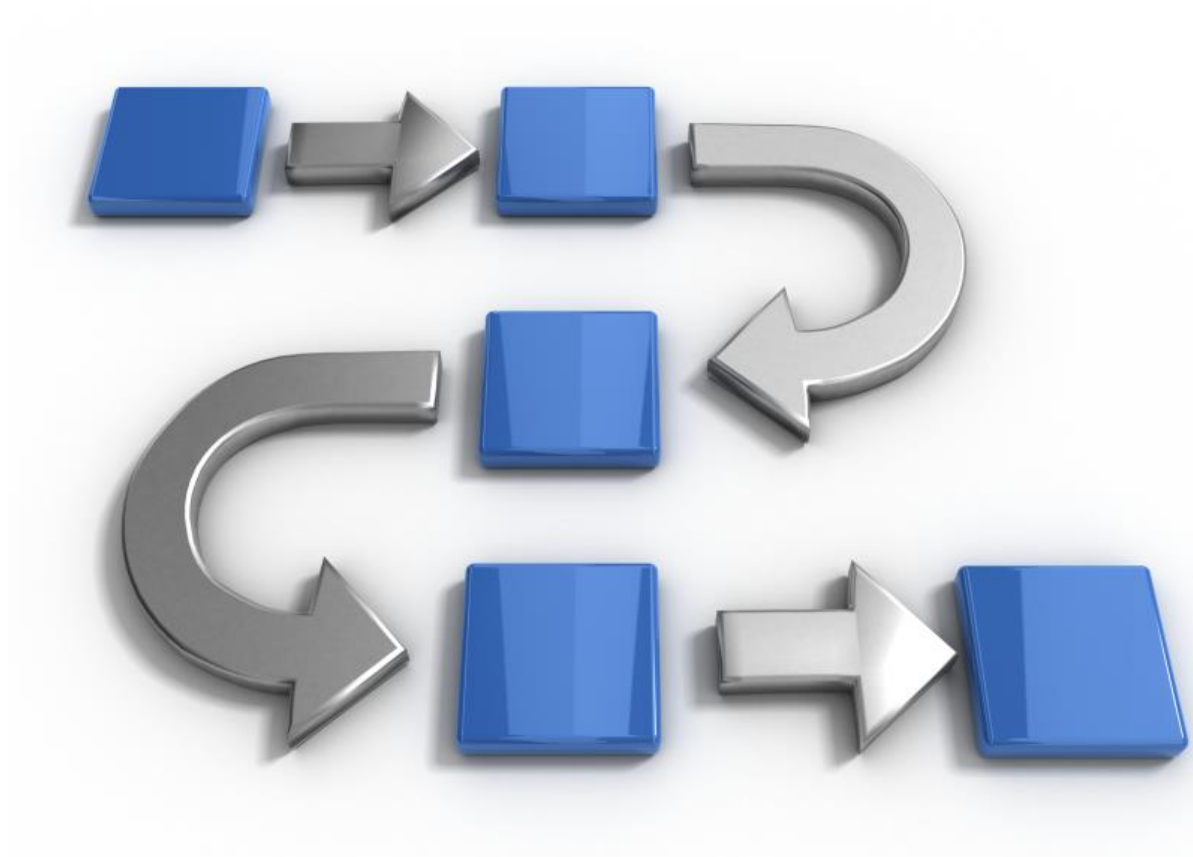


Break: Questions? Reactions?



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Implications for Treatment and Policy



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Substance Use Disorder is...

- **not** a moral or spiritual failing
- **not** lack of will or responsibility
- **not** a character defect
- **not** an addictive personality type
- **does not** have personality components such as **denial, rationalization**, evasion, **defensiveness, manipulation**, and **resistance** or any abnormally robust defense mechanisms



Evidenced Based Perspectives on SUD

- In fact, approximately **half the risk for addiction** is conferred by genetics.
- Most people do not develop addiction. Because initial experimentation and use is mostly rewarding with few negative consequences, use continues.
- With repeated exposure and **un-aware** by the person using the substance, person with SUD's *ability to self-regulate impulses to use the drug increasingly is **impaired***.
- Individuals actually are using the **drug against their will**.
 - Often unable to honor **their own sincere and genuine desire to abstain or moderate use**
 - Despite the threat of **severe consequences**
- We now understand SUDs are the **radical decay** in the rational **ability to regulate impulses to use substances despite the threat of harm**
- Why don't "those people" stop? BECAUSE - **functional and structural changes in the brain affect the neurocircuitry of impulse control, judgment, reward, memory and motivation**

Do our treatment approaches match the science and evidence base of SUDs?



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Responses to Addiction...



Treatment for SUDs: Same but Different

- Treatment is better than no treatment
 - **Detox alone is not effective**
- Rapid admission improves treatment engagement
- No single approach is most successful for all
- Effectiveness: enhanced by access, retention in treatment, readiness to change, **patient satisfaction**



Policy and Organizational Change Tips

Access

Does it take days, weeks, months to get me in?

–Assess your intake process:

- Bio/Psycho/Social?
- Exclusionary Criteria?
- Strengths-based approach to supporting client access

Retention

If I get in, do I want to stay? Can I stay?

–Explore the spirit of policies even if the treatment spirit has shifted:

- Discharge?
- Missed appointments?
- Positive urine screens
- Return to use?



The Tired Narratives of Drug Policy

"Addict"

Stigmatizing
Language about
Substance Use

"Trading One Addiction for Another"

Medication to Treat
Opioid Use Disorder

"Hooked on Opioids"

The Difference
Between Addiction and
Dependence

"Filling Parks & Playgrounds with Hypodermic Needles"

Misconceptions about
Syringe Service
Programs

"Legal Shooting Galleries"

Misinformation
about Supervised
Consumption Sites

"Addicted Babies"

Stigmatizing Language
about Neonatal
Abstinence Syndrome

"Helping is Enabling"

The myth of
co-dependency

"Cut Them Off"

Tough love doesn't
work

"Doctor Shopping and Drug Seeking"

Punishing vulnerable
patients is counter-
productive

"Prescription Fentanyl is Driving Overdoses"

Distinguishing between
Illicit and
Pharmaceutical
Fentanyl

"Junkie"

Stigmatizing
Language about
Substance Use

"Narcan Parties"

Misinformation
about Naloxone



Do our Interventions, Responses and Expectations Match the Science?

- Addiction is a primary, chronic disease of brain reward, motivation, memory and related circuitry.
- Dysfunction in these circuits leads to characteristic biological, psychological, social and spiritual manifestations.
- This is reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviors.
- Addiction is characterized by:
 - inability to consistently abstain, impairment in behavioral control
 - craving
 - diminished recognition of significant problems with one's behaviors and interpersonal relationships
 - dysfunctional emotional response
- Like other chronic diseases, **addiction often involves cycles of relapse and remission.**



ASAM American Society of
Addiction Medicine

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ASAM Updated Definition of Addiction

Addiction is 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*.

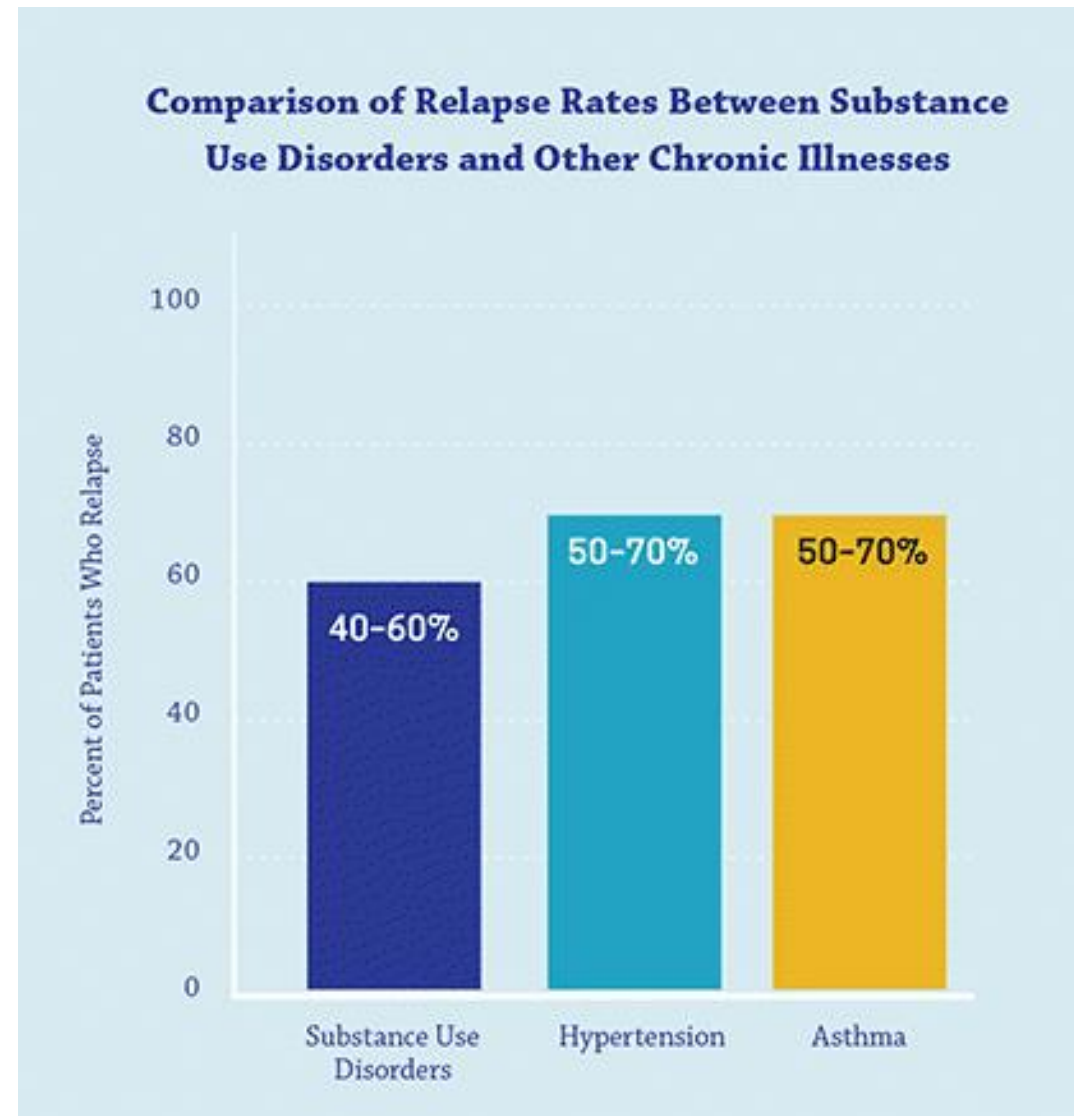
Prevention efforts and treatment approaches for addiction are generally as successful as those for other chronic diseases.

- Addiction does not occur in a vacuum – Genetics, Trauma, Social Determinants Health Disparities
- Adapting to DSM5 Criteria – Mild, Moderate, Severe
- Despite harmful consequences

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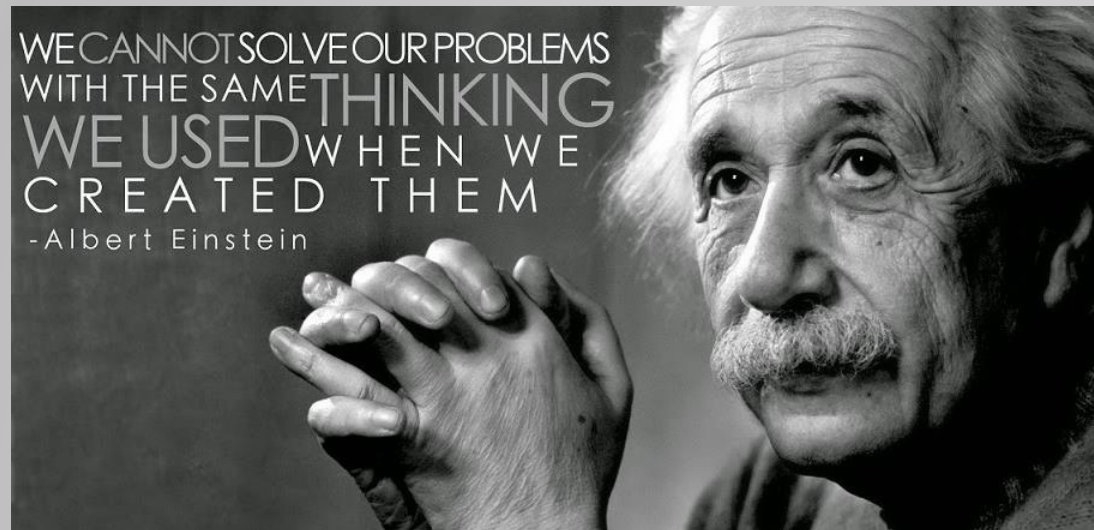
Chronic Health Conditions



Source: JAMA, 284:1689-1695, 2000.

Sticks and Stones

Changing the ways we think about addiction



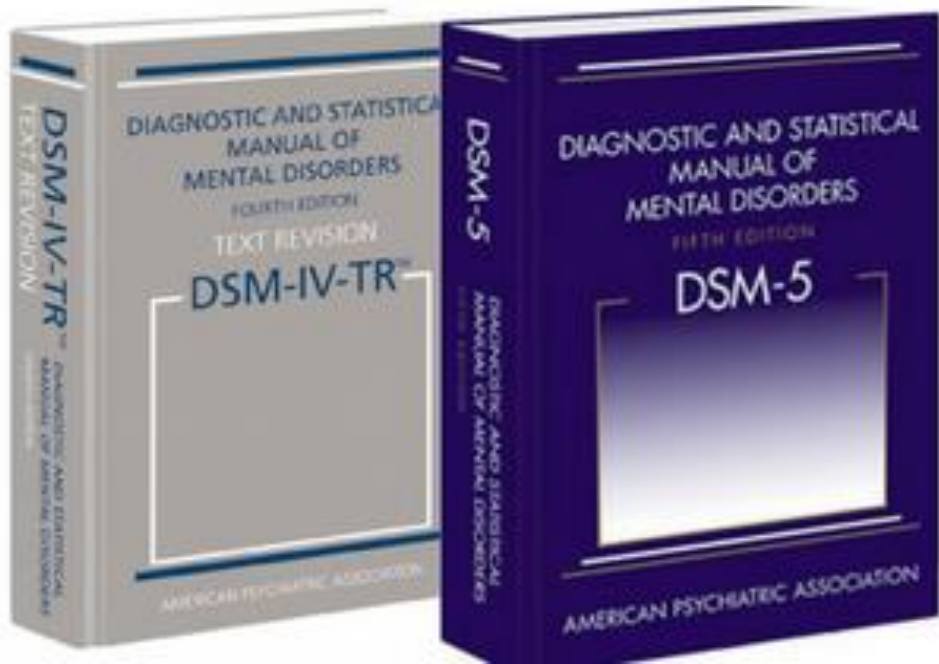
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Language Matters

Do's	Don'ts
Substance Use Disorder	Substance abuse
Individual with a Substance Use Disorder	Addict, Junkie Drug abuser, Druggie
In recovery; In remission	Clean; Staying clean
Has a Substance Use Disorder	Drug habit
Positive drug test; Currently using substances	Dirty drug test



DSM IV to DSM 5



Axis I Substance Dependence; Substance Abuse

- Abuse and dependence are GONE! Please help them get going.
- Spectrum
 - ❖ Mild: 2-3 symptoms
 - ❖ Moderate: 4-5
 - ❖ Severe: 6 or more
- Drug cravings added
- Problems with law enforcement eliminated because of cultural considerations

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Terms

- **Addiction:** Common name, severe SUD; associated with compulsive or uncontrolled use of one or more substances. *Addiction is a chronic brain disease that has the potential for both recurrence (relapse) and recovery.*
- **Dependence:** The state in which an individual only functions normally in the presence of a substance, experiencing physical disturbance when the substance is removed.
 - A person can be dependent on a substance without being addicted. AND dependence sometimes leads to addiction.
- **Tolerance:** Alteration of the body's responsiveness to alcohol or a drug such that higher doses are required to produce the same effect achieved during initial use.
- **Withdrawal:** A set of symptoms and signs that are experienced when discontinuing use of a substance. The person is dependent or addicted.
 - **Negative emotions** such as stress, anxiety, or depression
 - **Physical effects** such as nausea, vomiting, muscle aches, and cramping
 - Symptoms often lead a person to use the substance again



Is Treating Substance Use Disorders Different?

- Individualized – duration, intensity, lengths of care
- Treating across a continuum
- Integration of medications, social support, counseling, behavioral therapies
- Focused on interventions to ENHANCE readiness to change and engagement
- Person-centered and strengths-based
- Address multiple co-occurring disorders

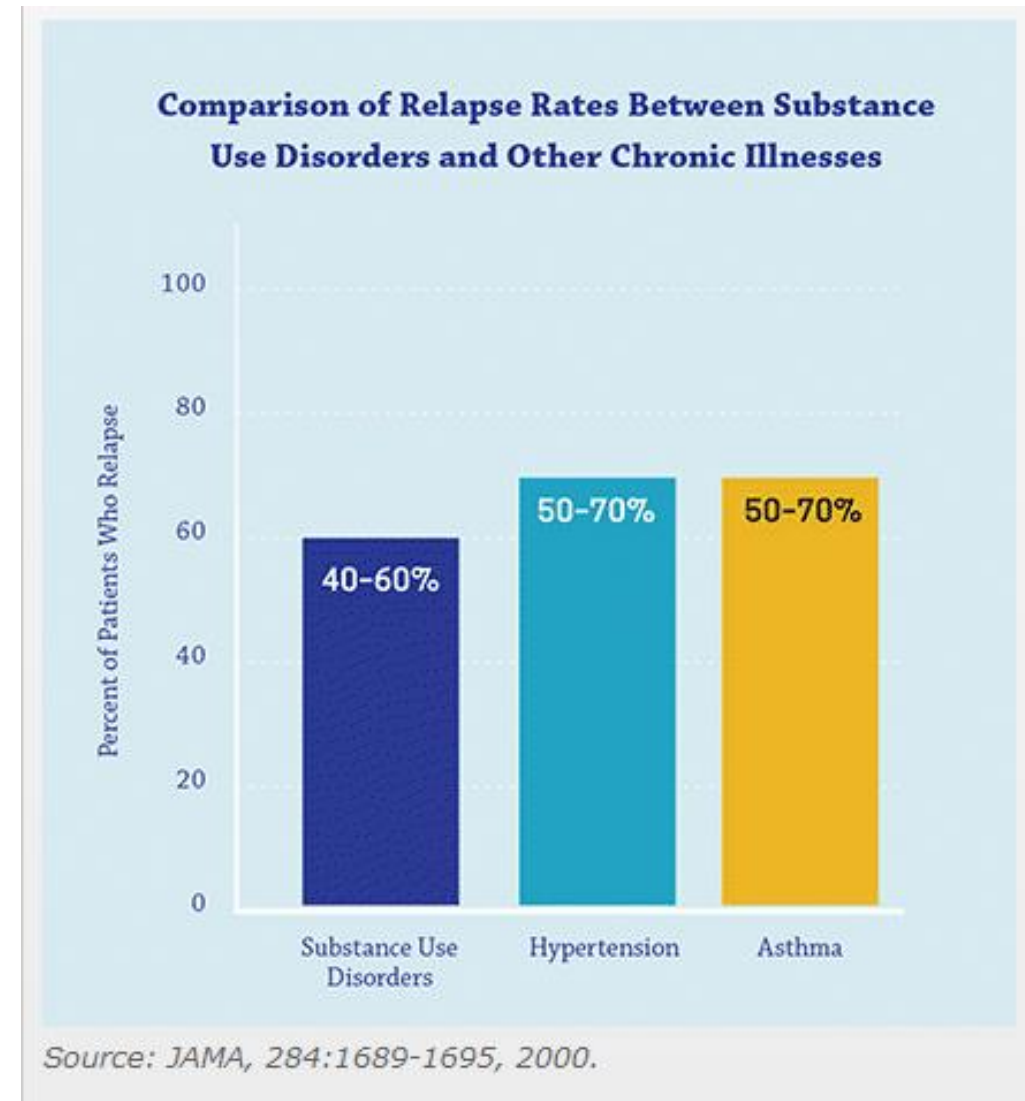


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Chronic Health Conditions

- Longer engagement in care = better the outcomes
- Require long-term and/or repeated interventions to reach their goal
- Involve Social Supports – family, friends, ????
- Relapse – return to use – lapses – it's ok and to be expected!



A Shift in How We Treat Addiction

- Evidenced-based Care
- Measurement-based Care – Abstinence is overrated and doesn't tell the story
- SBIRT
- MAT



SBIRT

- Improves clinical care
- Transforms culture and prepares your workforce for health care changes
- Screening – Expands reach to new audiences
 - Replaces less effective screening methods
- Substance use as a bio-behavioral disorder and a chronic health condition



Medication Assisted Treatment

MAT = FDA approved medication + behavioral therapy + psychosocial supports

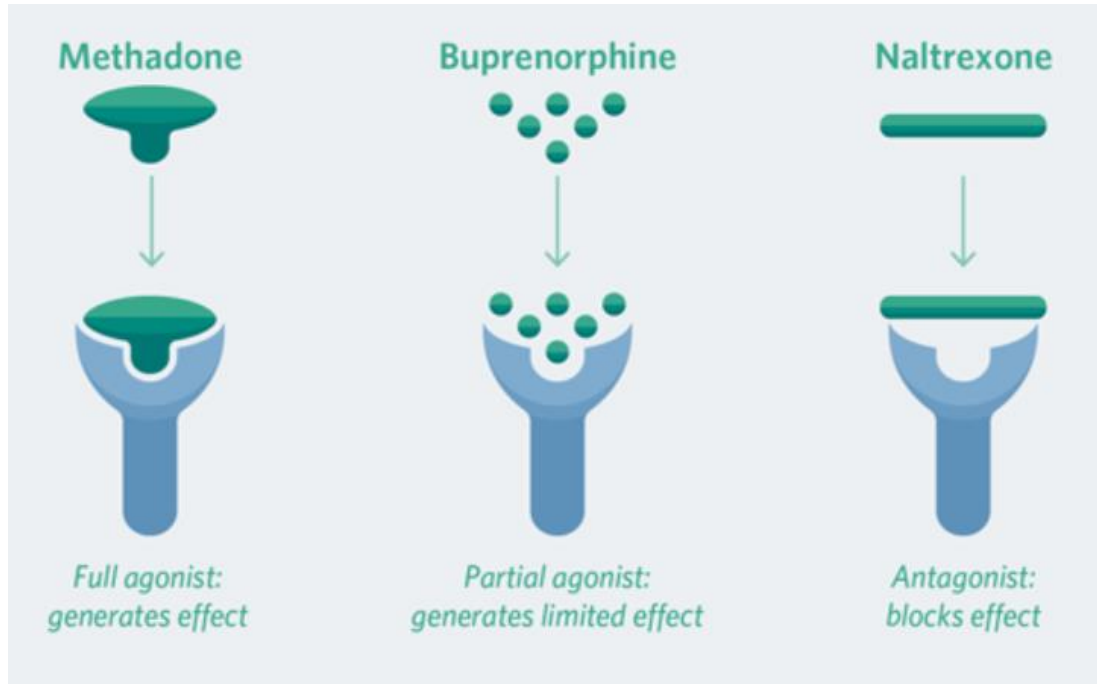
- **FDA-approved medications include:** buprenorphine, methadone, naltrexone (NRTs)
- **Behavioral therapies can include:** counseling, family therapy, peer support programs
- **Recovery Supports: 12 Step; SMART:**
<https://www.smartrecovery.org/>



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OUD Drugs: Distinct Pharmacology and Roles in Treatment



- **Methadone** is a full agonist. By fully occupying the mu-opioid receptor, methadone lessens the painful symptoms of opiate withdrawal and blocks the euphoric effects of other opioid drugs.
- **Buprenorphine** is a partial agonist, meaning it does not completely bind to the mu-opioid receptor. As a result, buprenorphine has a ceiling effect, meaning that its effects will plateau and will not increase even with repeated dosing.
- **Naltrexone** is an opioid antagonist, meaning that it covers, rather than activates, the mu-opioid receptor, effectively blocking the effects of opioids if they are used.

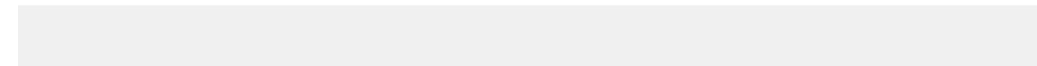
MAT Video

<https://www.pewtrusts.org/en/research-and-analysis/video/2017/medication-assisted-treatment-the-best-therapy-for-opioid-use-disorder>

Medication-Assisted Treatment

The best therapy for opioid use disorder

VIDEO January 25, 2017 Topics: U.S. Policy & U.S. State Policy Projects: Substance Use Prevention and



© 1min 50sec

Making the Case

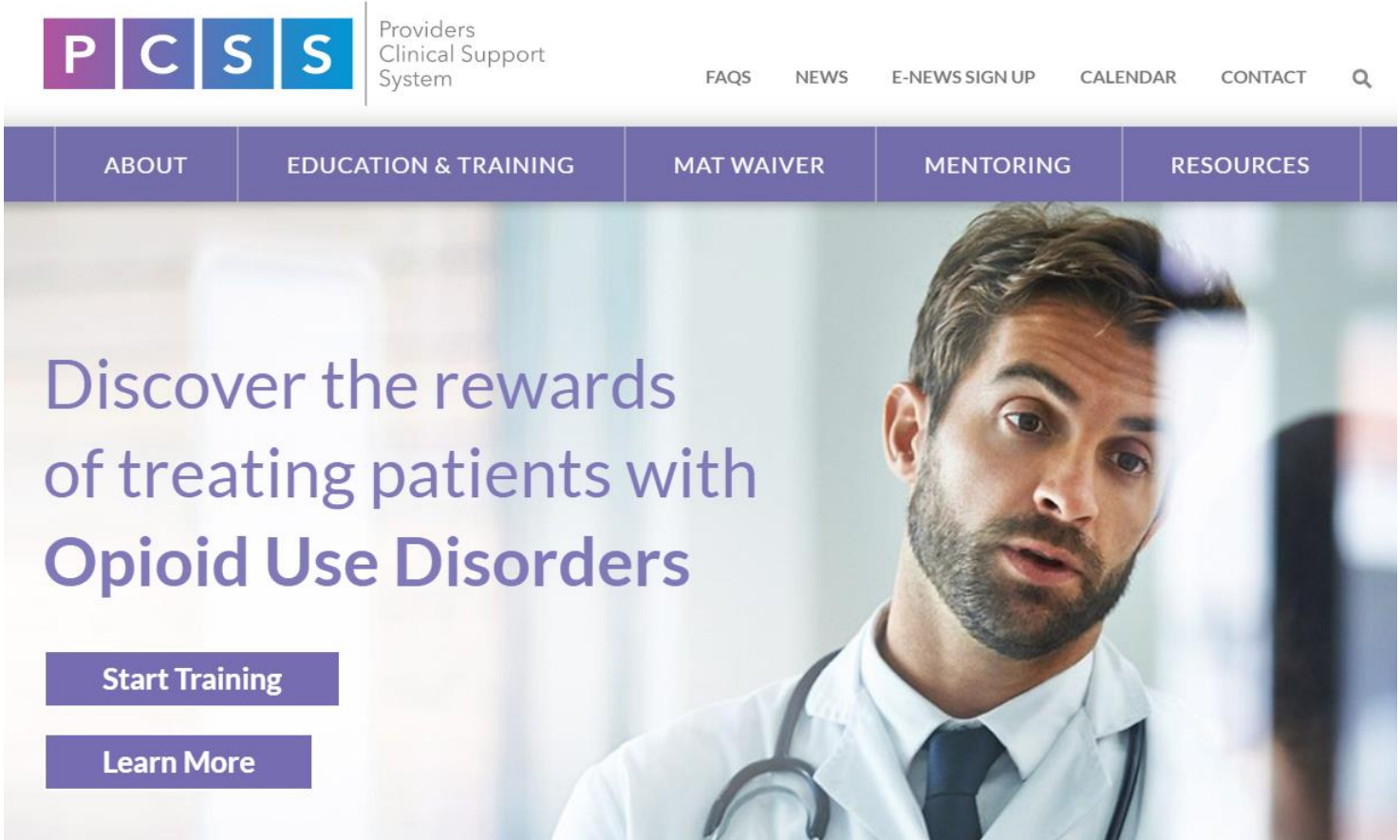
- Relieve the symptoms of withdrawal
- Reduce cravings
- Blocks the effects of opioids
- Improve coping skills
- Reduce the likelihood of relapse
- Engagement and retention



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Support for Prescribers



The screenshot shows the website for the Providers Clinical Support System (PCSS). The header includes the logo 'P C S S' and the text 'Providers Clinical Support System'. Navigation links include 'FAQS', 'NEWS', 'E-NEWS SIGN UP', 'CALENDAR', and 'CONTACT'. A secondary menu contains 'ABOUT', 'EDUCATION & TRAINING', 'MAT WAIVER', 'MENTORING', and 'RESOURCES'. The main banner features a photograph of a doctor and the text: 'Discover the rewards of treating patients with Opioid Use Disorders'. Below the text are two buttons: 'Start Training' and 'Learn More'.

<https://pcssnow.org/>

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Building Recovery Capital

- The sum of the strengths and supports that are available to a person to help them initiate and sustain long-term recovery.
 - *Granfield and Cloud, 1999, 2004; White, 2006*
- Domain:
 - Social – family and social networks
 - Physical – tangible assets
 - Human – internal, intangible assets
 - Cultural – values, principles, beliefs
 - *Best & Laudet (2010)*



The Role of Social Workers

- Culture eats strategy for breakfast – stigma and discrimination
- Social workers are trained in client-centered, strength-based approaches and to "meet clients where they are."
- Addiction is a complex system. Social Workers are expert in systematic awareness, assessment and thinking.
- Social workers
 - have the core competencies to treat addiction as a brain disease and as a chronic health condition.
 - are experts at understanding systems, catalyzing change at all levels, and navigating the cultural, organizational, and personal dynamics that influence change
 - are emerging as the thought and action leaders in treating addiction



Thank You!

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