











# The Biology of Addiction November 13, 2025



In support of improving patient care, this activity has been planned and implemented by American Academy of CME, Inc. and Partnership for a Drug-Free New Jersey. American Academy of CME, Inc. is Jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

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American Academy of CME, Inc., designates this educational activity for 1.0 ANCC contact hours.

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This activity provides 1.0 ACPE contact hours (0.1 CEUs) of continuing education credit. Universal Activity Number: JA4008191-9999-25-052-L01-P, Knowledge

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American Academy of CME, Inc. designates this activity for 1.0 continuing education credits.

#### **Other HCPs**

Other members of the care team will receive a certificate of participation.



### **Additional Continuing Education Credit**

#### **EMT**

This webinar has been approved by NJ OEMS for 1 EMT Elective CEU.

#### **Athletic Trainers**

Partnership for a Drug-Free New Jersey (BOC AP#: P12171) is approved by the Board of Certification, Inc. to provide continuing education to Athletic Trainers (ATs). This program is eligible for a maximum of one (1) Category A hours/CEUs.

### **Additional Information About Continuing Education**

- You must apply to receive continuing education credit. It will not be sent to you just for attending this webinar.
- WHERE CAN YOU FIND THE LINK TO APPLY FOR CREDIT?
  - The last slide of this webinar
  - The chat at the end of the program
  - The follow-up email you will receive tomorrow
- The poll at the end of today's webinar IS NOT the evaluation for continuing education credit. The evaluation will be available through the link mentioned above.
- The links will be active for 30 days after today's event.

PA Planner Dean Barone discloses that he serves on the speakers bureaus of Ethicon and Johnson & Johnson. All other planners, faculty, and reviewers have no relevant financial relationships to disclose. All relevant financial relationships have been mitigated.



## Featured Presenter



Holly Geyer, MD, FASAM

Hospital Internal Medicine and Addiction Medicine Specialist

Associate Professor of Medicine

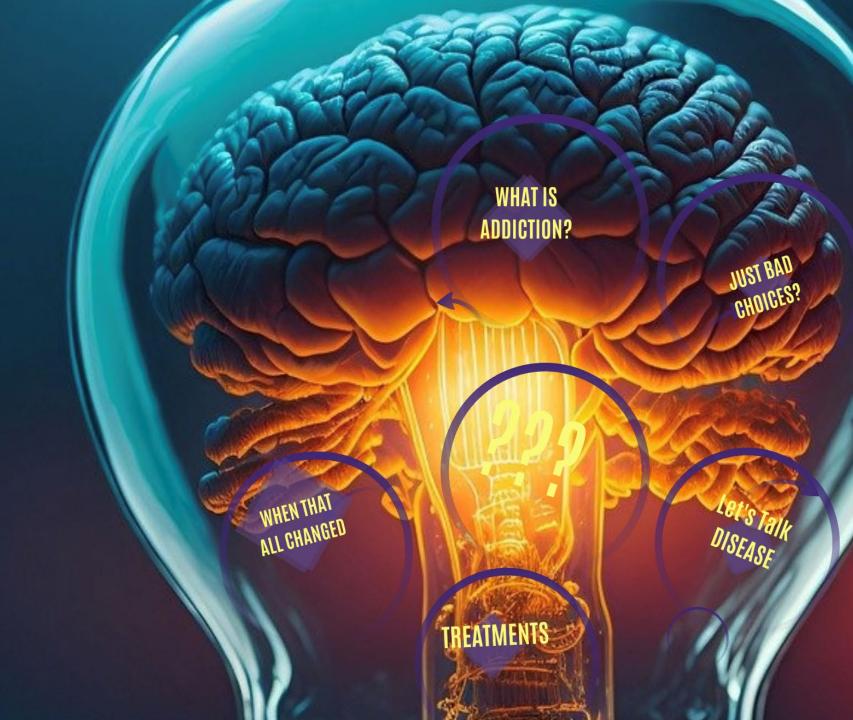
Physician Lead, Mayo Clinic Opioid Stewardship Program AZ

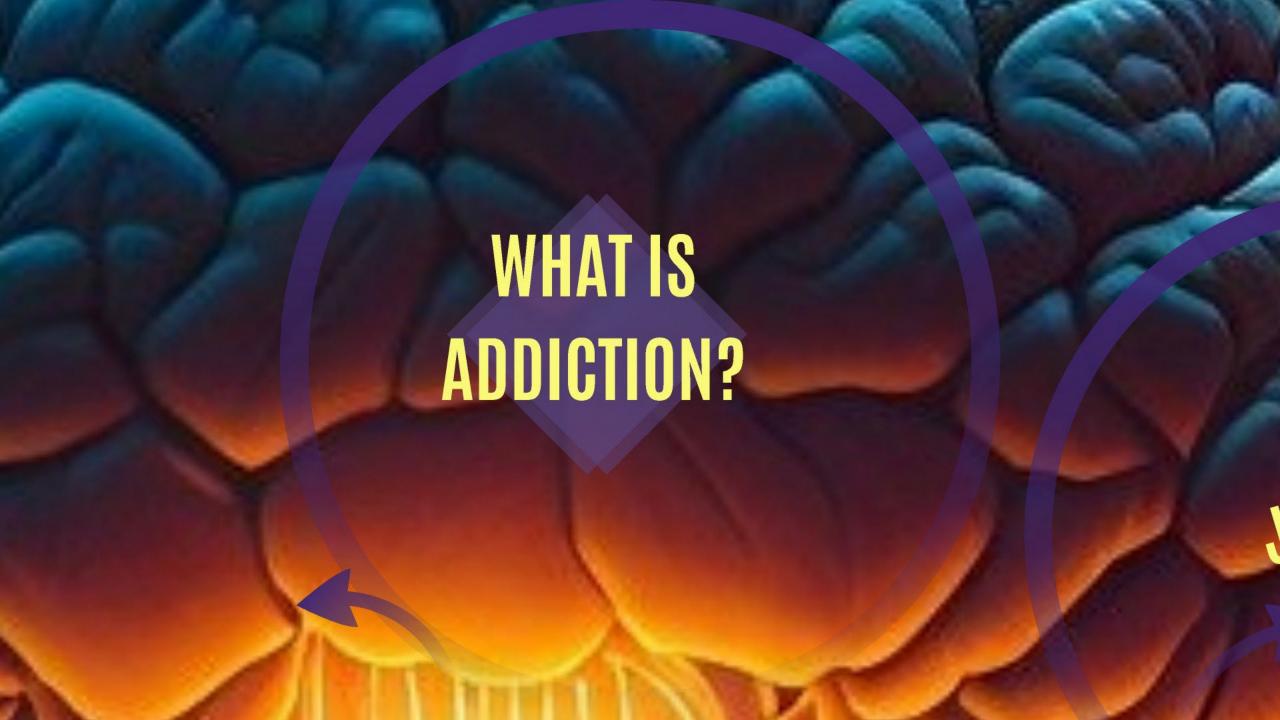
Medical Director, Mayo Clinic Occupational Health Services AZ



# What Is ADDICTION?

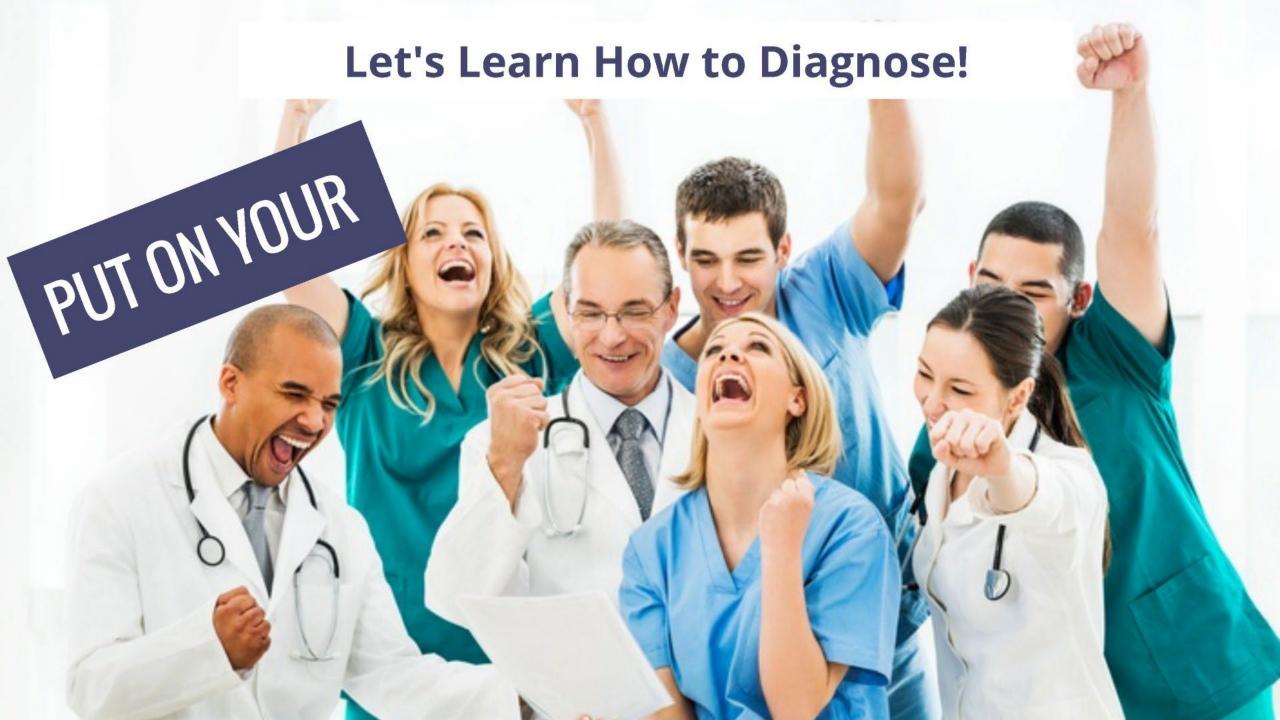
Holly Geyer, MD, FASAM Mayo Clinic, Arizona















1. High dose cisplatin



- 1. High dose cisplatin
- 2. Abdominal Radiation



- 1. High dose cisplatin
- 2. Abdominal Radiation
- 3. Bowel resection



- 1. High dose cisplatin
- 2. Abdominal Radiation
- 3. Bowel resection
- 4. HOLY MOLY
  Lady, are you
  CRAZY!!! you
  DON'T HAVE A
  DIAGNOSIS!!









1. Labs



1 Loho 1. Lubo



- 1. Lubo
- 2. Brain Biopsy



1 Loho 1. Lubo

A Drain Dianov



- 1. Lubo
- A Drain Dianov
- 3. MRI or CT Head



- 1. Lubo
- A. Drain Dianov
- J. MILL OF OT HOUSE



- 1. Lubo
- A Drain Dianov
- J. Willi or OT Hood
- 4. Lunch?

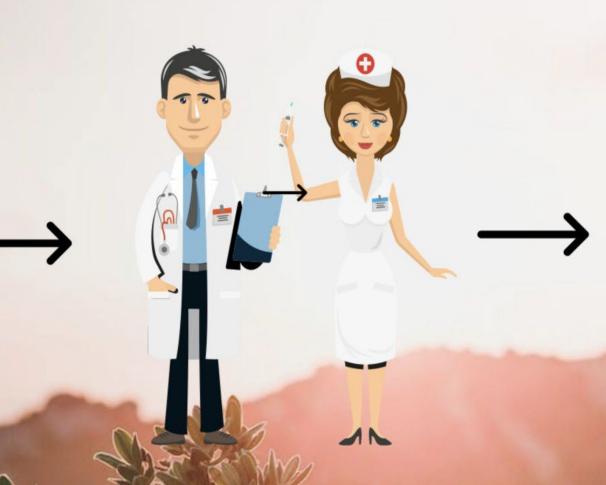




# Back in the Day

Addictive Behaviors
Overdoses
Withdrawals
High Tolerance





RECOMMEND THEY FIND A

BEHAVIORAL HEALTH TREATMENT PROGRAM

### Medical Field

- EVIDENCE-BASED
- OBJECTIVE FEATURES
- DIAGNOSTICS DEPENDENT
- REPRODUCIBLE
- STANDARDIZED

### Behavioral Health Field

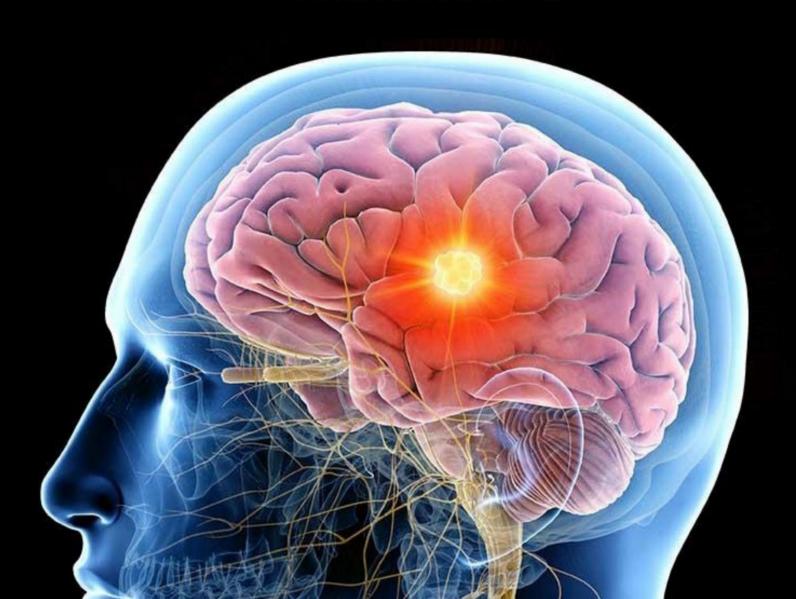
- +/- EVIDENCE-BASED
- SUBJECTIVE FEATURES
- LIMITED DIAGNOSTICS
- +/- REPRODUCIBLE
- +/- STANDARDIZED







# Addiction Is

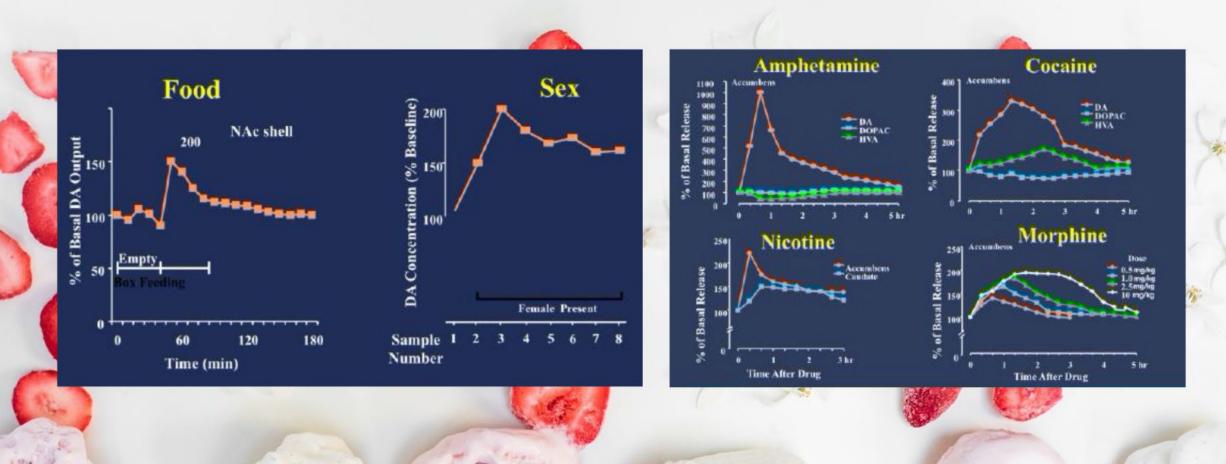


## Addiction Is

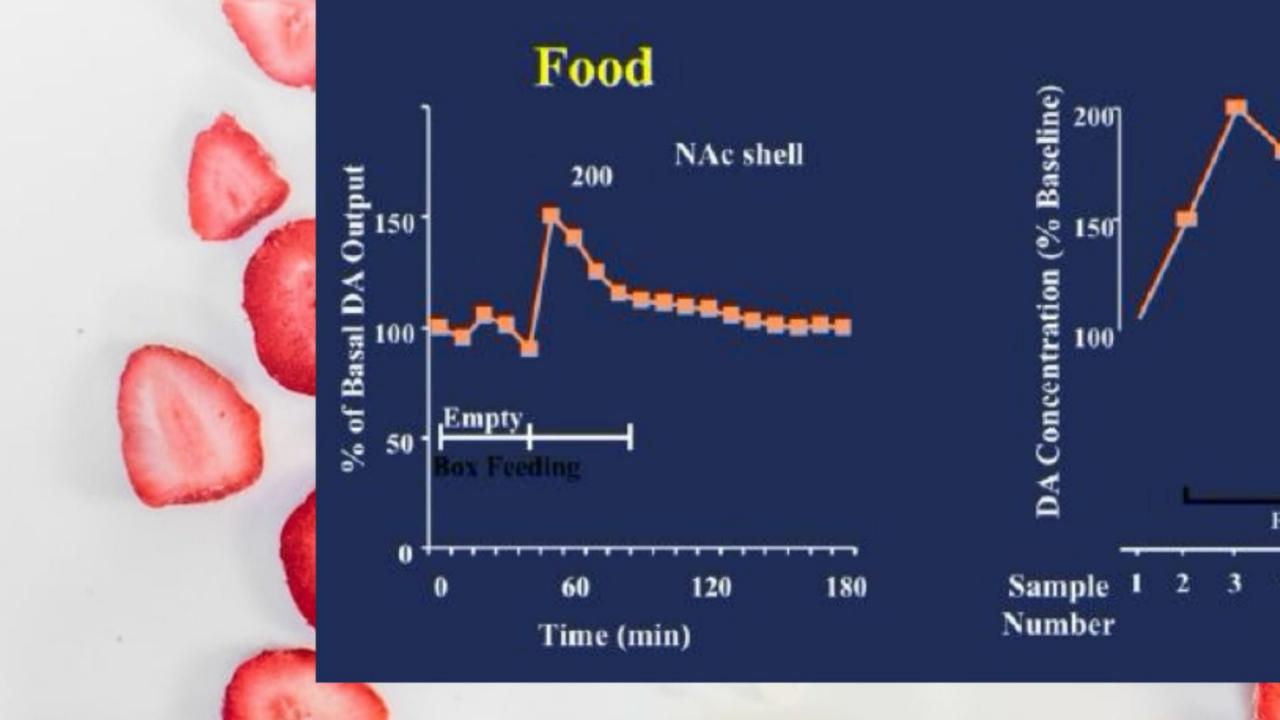


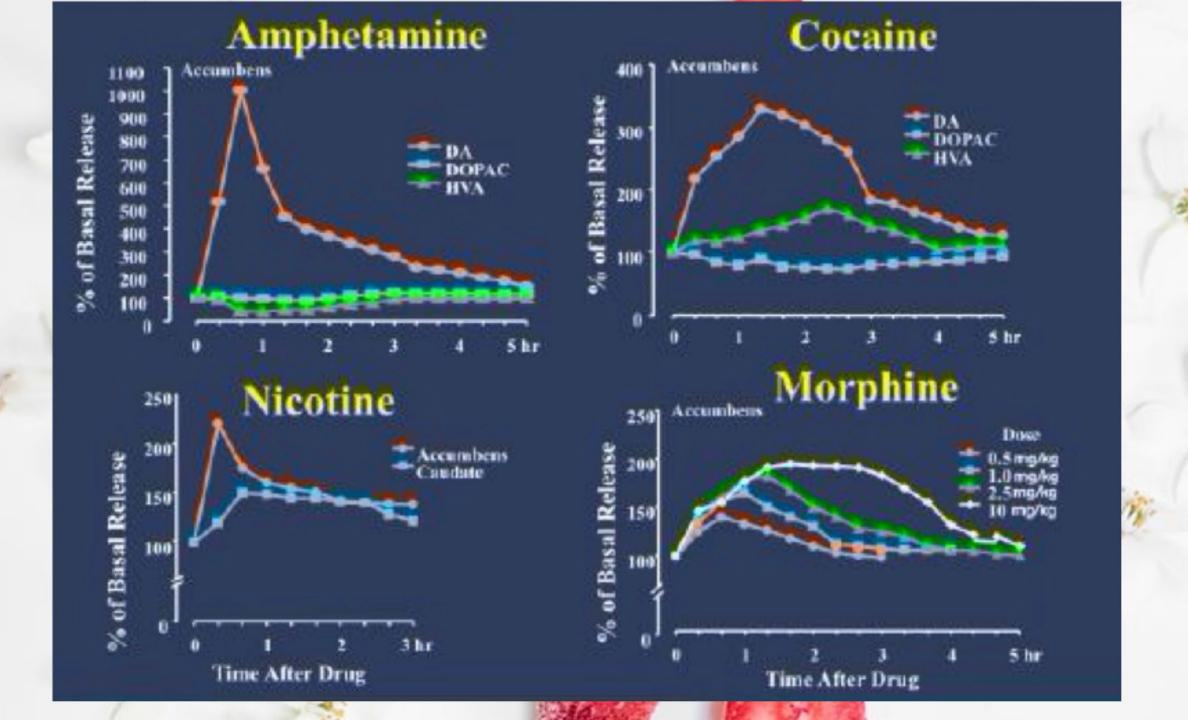


## Dopamine, the 'Happy' Chemical



Di Chiara G: Eur J Pharmacol. 1999 June 30;375(1-3):13-30 Di Chiara G: Proc Natl Acad Sci USA. 1988;85(14):5274-5278



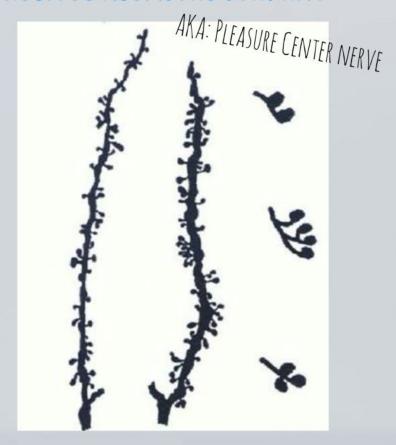


# The Brain Adapts!

OPIOIDS WARP

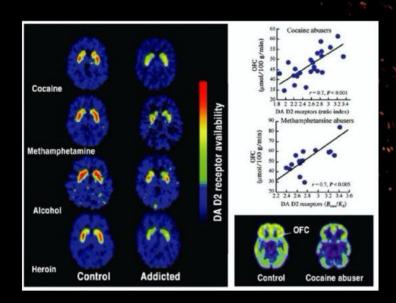
REWARD PREDICTION
STIMULUS-RESPONSE
APPROACH BEHAVIOR
LEARNING (CONDITIONED TOO)
DECISION MAKING

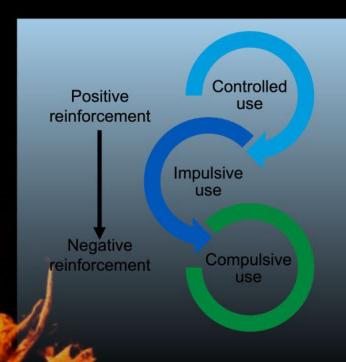
#### **NUCLEUS ACUMBENS DENDRITE**

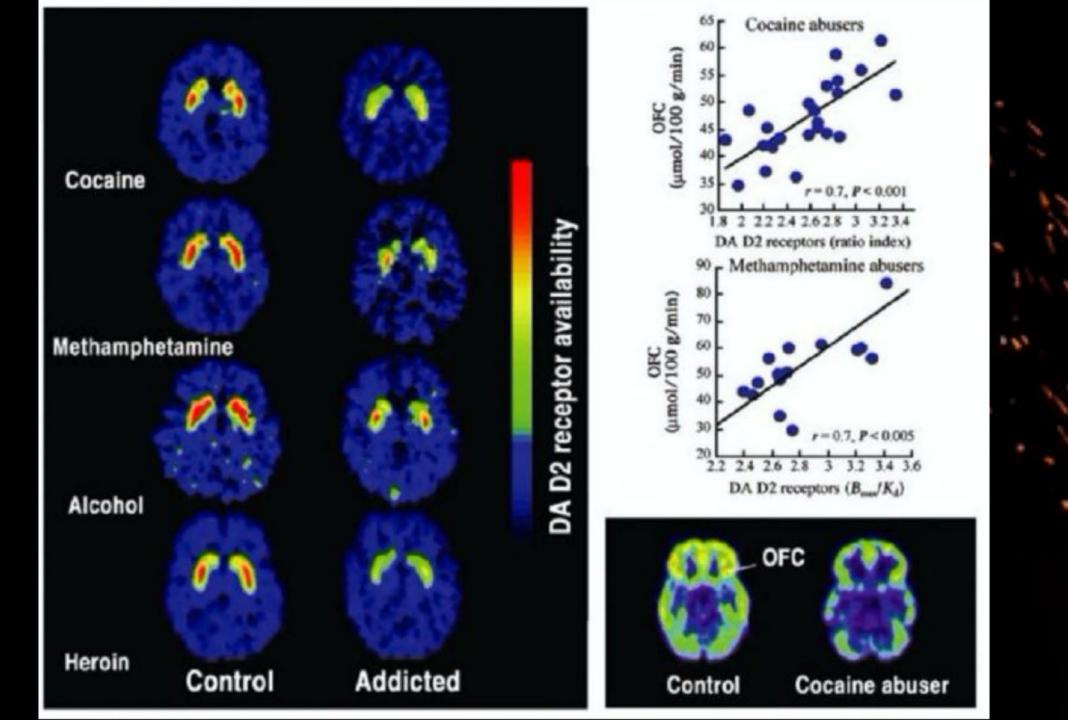


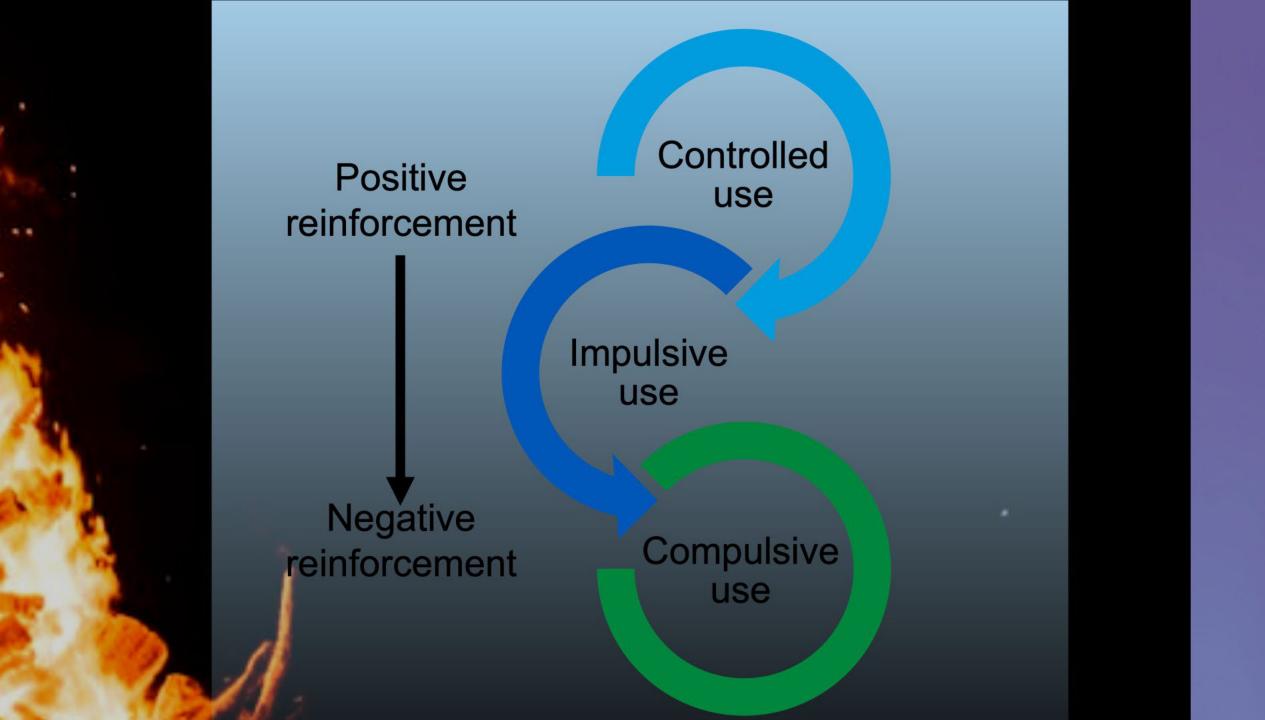
Saline Amph

# And Burns Out



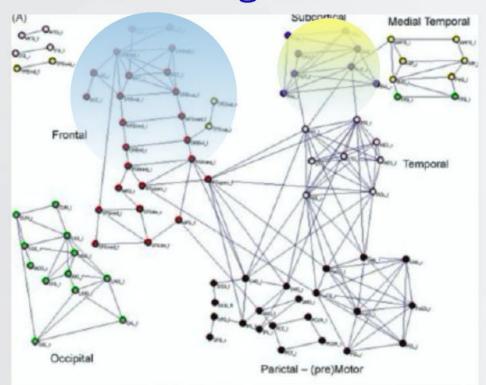




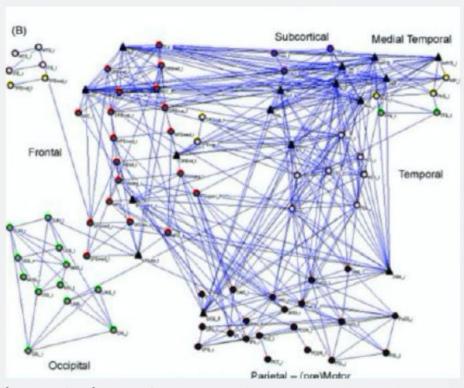


## **And Rewires**

#### Non-Drug User



#### Chronic heroin user



Comparison of non-drug users and the chronic heroin users' brain functional networks during the resting state

Liu J et al: PLoS one.2011;6(10):e23098

## The Mind Becomes a Prison

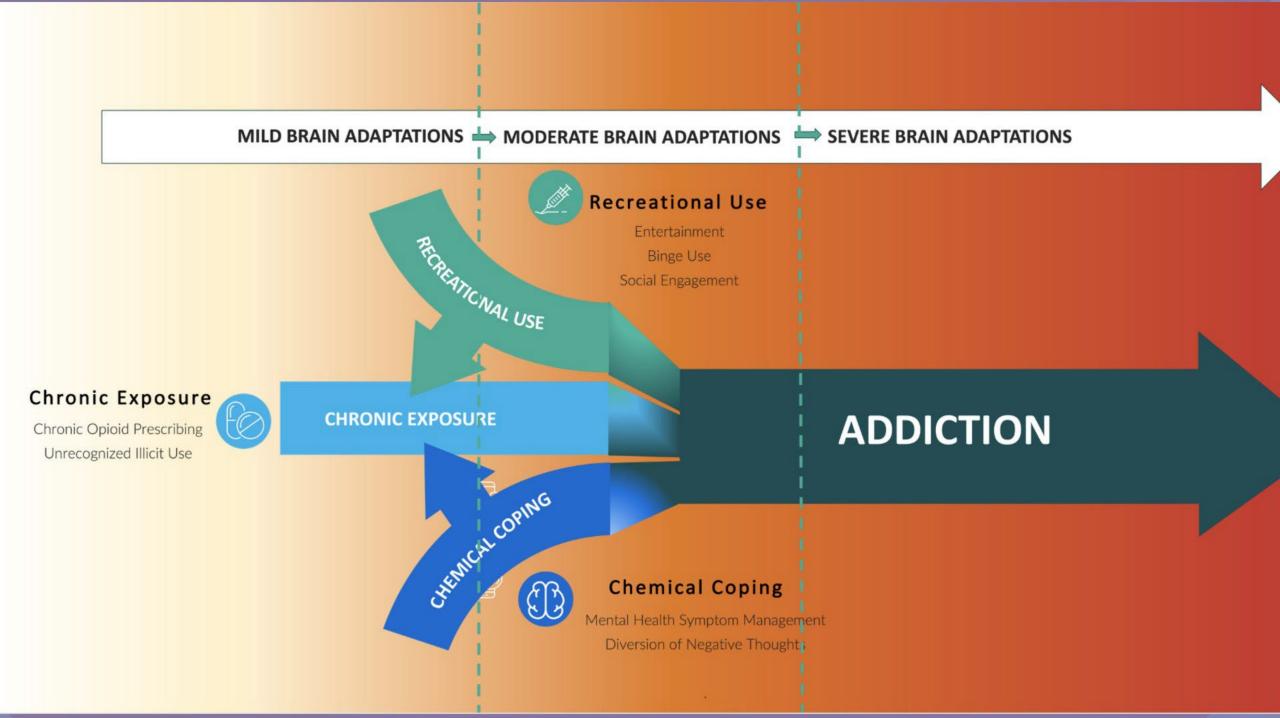


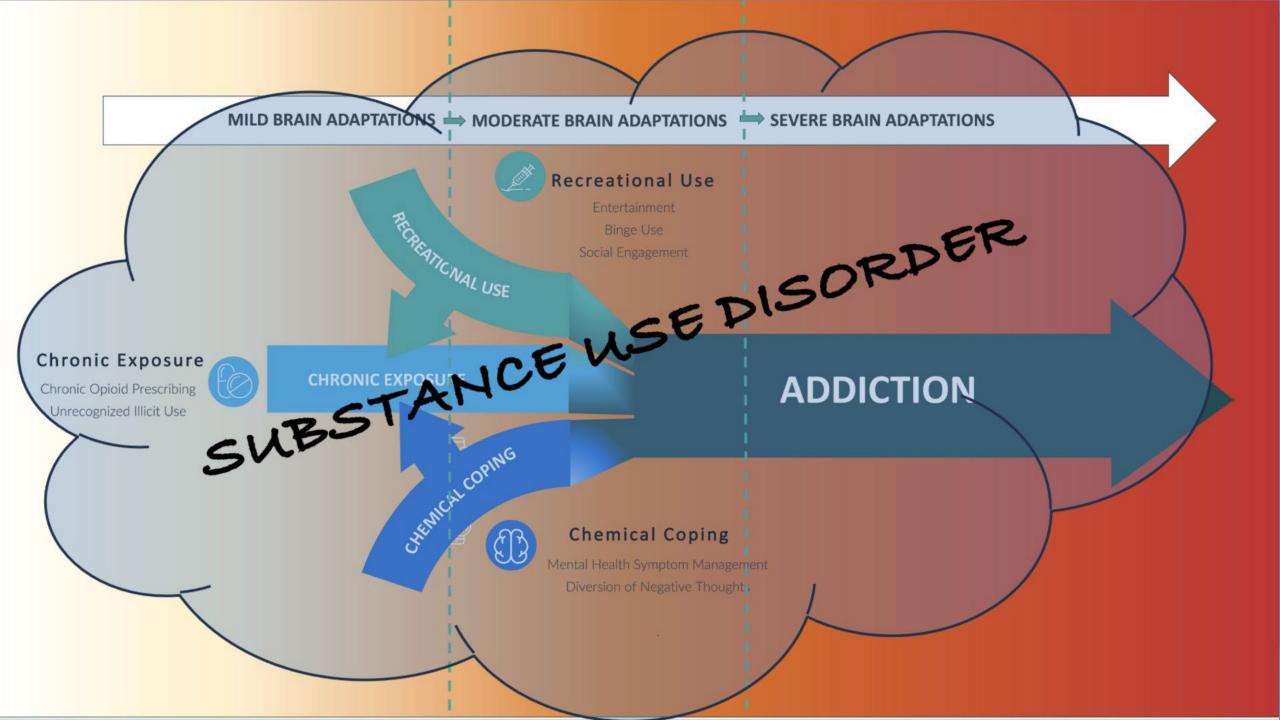


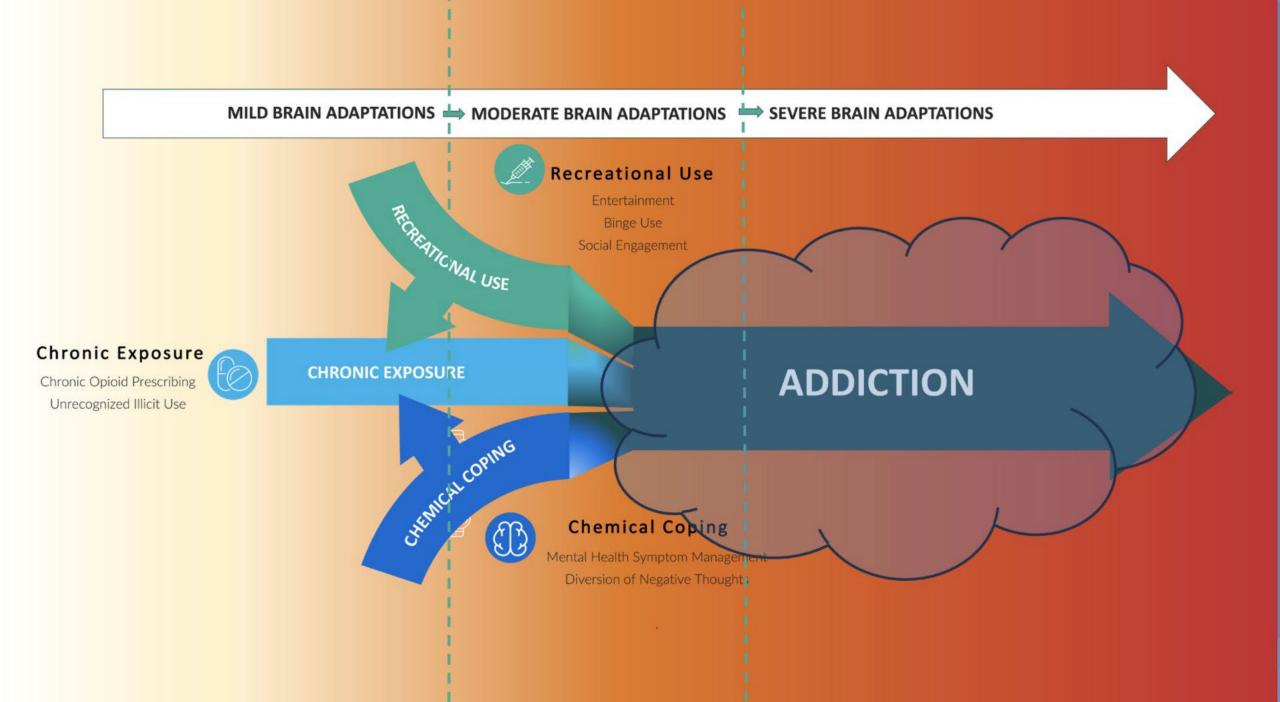
## What is Addiction?

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.

-ASAM







## **DSM V**

DIAGNOSTICS AND STATISTICAL MANUAL OF MENTAL DISORDERS, 5TH ADDITION



How Do we Diagnose a Substance Use Disorder?

Taking the substance in larger amounts or for longer than intended.

Unsuccessful attempts to cut down or control substance use.

Spending a significant amount of time obtaining, using, or recovering from the substance.

Craving or a strong desire to use the substance.

Failing to fulfill major obligations at work, school, or home due to substance use.

Continued substance use despite social or interpersonal problems caused by it

Giving up or reducing important social, occupational, or recreational activities because of substance use.

Using substances in situations where it is physically hazardous.

Continued substance use despite knowing it causes a persistent or recurrent physical or psychological problem.

Tolerance (needing more of the substance to achieve the desired effect)

Withdrawal (experiencing characteristic withdrawal symptoms when substance use is reduced or stopped).

Taking the substance in larger amounts or for longer than intended.

Unsuccessful attempts to cut down or control substance use.

Spending a significant amount of time obtaining, using, or recovering from the substance.

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HOW DO WE TREAT

#### How do we Treat Addiction?

It depends...

Are you targeting the

DISEASE

or the

**PATIENT** 

Neurotransmitter abnormalities
Receptor deficits
Hormonal changes
CNS rewiring
Medical complications
Withdrawals

A loved-one
A community member
A bread-winner
A tax payer
A citizen
A whole body
A soul



**Everything else!** 

**Exp: MOUD** 



## Healing Takes a Village



#### **BIOLOGICAL**

MOUD (buprenorphine, methadone, naltrexone); Withdrawal medications, Antidepressants, Antianxiety, Sleep, Comorbidities



#### **PSYCHOLOGICAL**

Mental health assessments, Counseling, Grief, Trauma, Relationships



#### SOCIAL

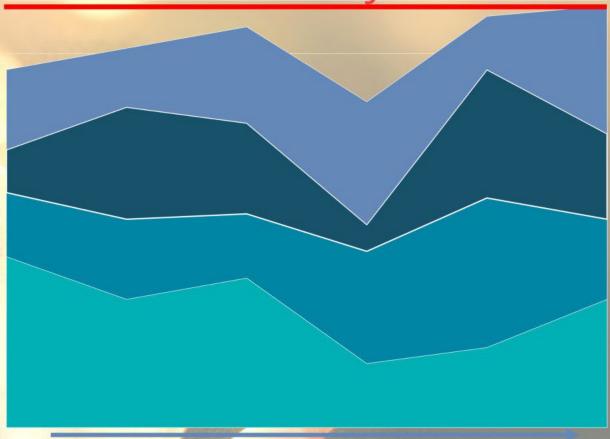
Relationships, Financial, Vocational, Legal, Living Conditions, Parental Rights



#### SPIRITUAL

Shame, Guilt, Moral Failures, Restoration to Higher Power, Purpose





Time

## What Is MOUD?

**MOUD: Medications for Opioid Use Disorder** 

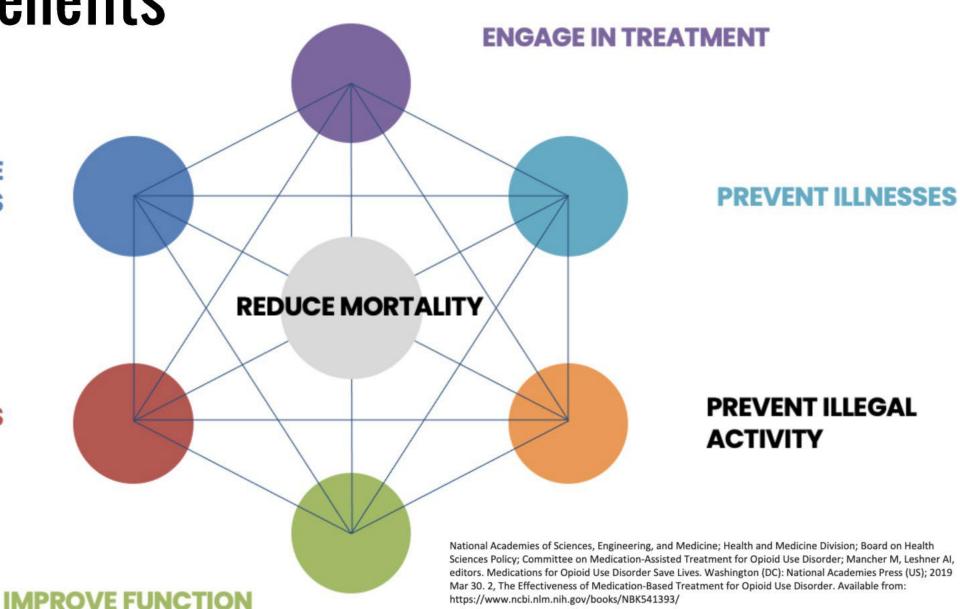
**MAT: Medication Assisted Treatment** 



**MOUD Benefits** 

REDUCE WITHDRAWALS

REDUCE CRAVINGS



# Despite This...

Detox remains the **MOST COMMON** treatment for OUD

STUDIES SHOW:

>90% OF PATIENTS WITH OUD

THAT QUIT OPIOIDS WITHOUT

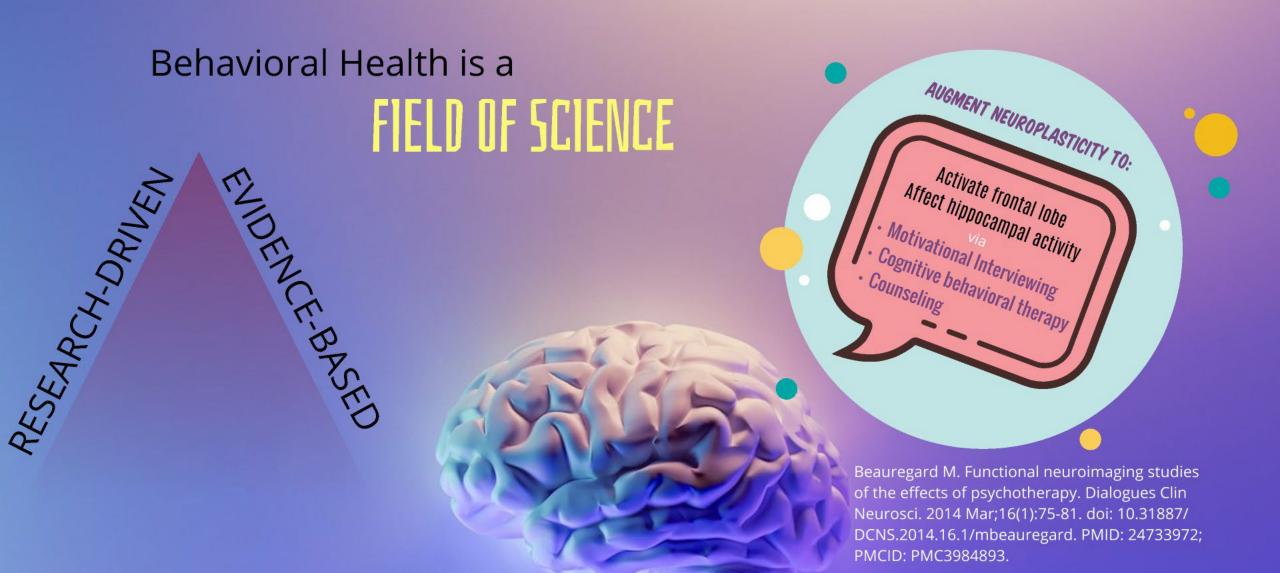
MOUD WILL BE BACK ON THEM IN

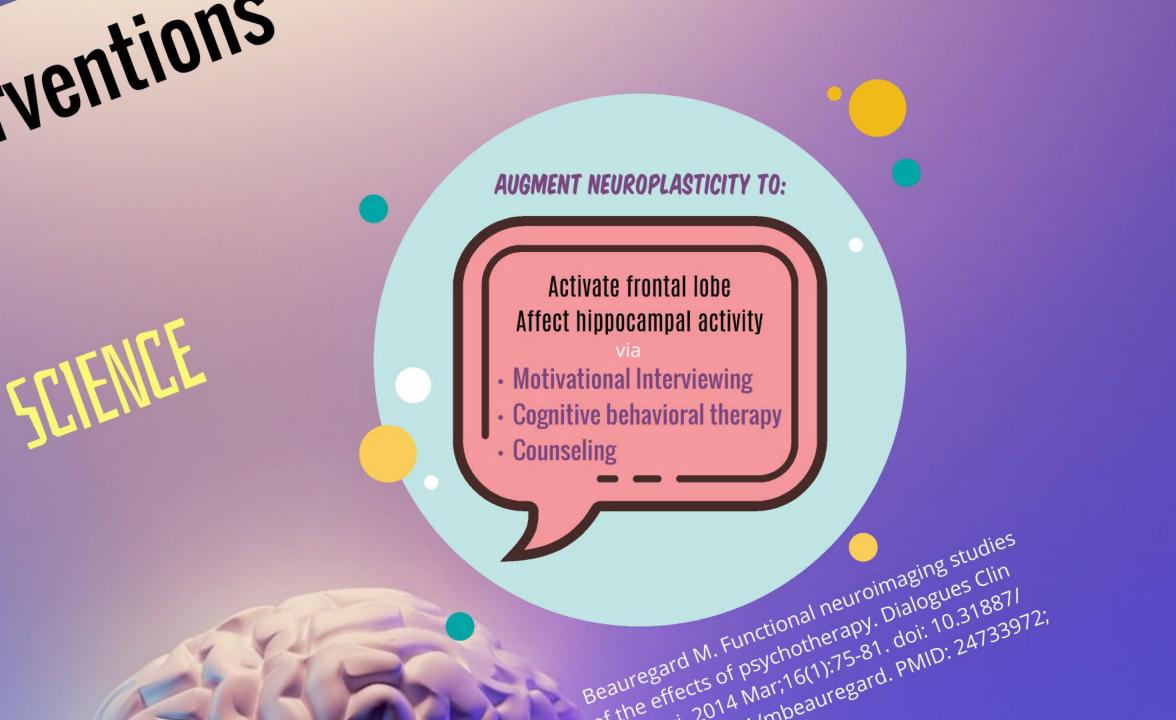


Wakeman SE, Larochelle MR, Ameli O, et al. Comparative Effectiveness of Different Treatment Pathways for Opioid Use Disorder. JAMA Netw Open. 2020;3(2):e1920622. doi:10.1001/jamanetworkopen.2019.20622

Kakko J, Svanborg KD, Kreek MJ, Heilig M. 1-year retention and social function after buprenorphine-assisted relapse prevention treatment for heroin dependence in Sweden: a randomised, placebo-controlled trial. Lancet. 2003 Feb 22;361(9358):662-8. doi: 10.1016/S0140-6736(03)12600-1. PMID: 12606177.

## **Behavioral Health Interventions**





## **Aftercare Transitions**

HOUSING/FOOD SECURITY **VOCATION SUPPORT** LEGAL SUPPORT STEPDOWN TREATMENTS SUPPORT GROUP ENGAGEMENT SPONSOR IDENTIFICATION RELAPSE ACTION PLANS NALOXONE LONG-TERM MOUD PROVIDER CLIENT FOLLOWUP





## What do Religious/Spiritual Practices Offer in SUD?



Kelly JF, Stout RL, Magill M, Tonigan JS, Pagano ME. Spirituality in recovery: a lagged mediational analysis of <u>alcoholics</u> anonymous' principal theoretical mechanism of behavior change. Alcohol Clin Exp Res. 2011 Mar;35(3):454-63.

**FORGIVENESS** 

Grim BJ, Grim ME. Belief, Behavior, and Belonging: How Faith is Indispensable in Preventing and Recovering from Substance Abuse. J Relig Health. 2019 Oct;58(5):1713-1750.\



National Guidance on Essential Specialty Substance Use Disorder (SUD) Care



### Do Standards of Care for Addiction Exist?

YES.

# What are 'Standards of Care'?

#### **Legal Perspective Clinical Perspective** Physicians must apply clinical judgment within that "Standard of care" is a legal term, not a medical one. framework. Guided by **best practices**, **training**, **and patient** Defined by state legislatures, agencies, and courts. needs. Providers should aim to meet or exceed national Majority of states use the national standard (e.g., CT standards, especially with telehealth/internet Code §52-184c). resources. A few states retain locality standards (same Specialists are generally held to **national expertise** community/state). expectations. Clinicians should strive toward **optimal care** for Standard of care is a **continuum**: from barely safety and outcomes, even though the law only acceptable to optimal care. requires minimum acceptable care. Malpractice liability: physicians only need to **meet the** Documentation of decision-making and rationale is essential for continuity of care and legal protection. continuum threshold.

It describes the degree of care that a prudent and reasonable individual is expected to exercise when faced with comparable circumstances.

| Service Element                          | Description  |
|--|--|
| Language services                        | Provision of services in preferred languages to        |
|  | improve accessibility and engagement.                  |
| Comprehensive assessments                | Evaluation of mental health and substance use          |
|  | disorders to tailor individualized care plans.         |
| Drug and alcohol testing                 | Baseline testing and periodic monitoring throughout    |
|  | programming for safety and progress.                   |
| Infectious disease testing and treatment | Screening and management for HIV, Hepatitis B and      |
|  | C, and sexually transmitted diseases.                  |
| Counseling services                      | Access to comprehensive counseling to address both     |
|  | substance use and co-occurring issues.                 |
| Health and SUD education                 | Educational programs on health and substance use       |
|  | disorders for patients and families.                   |
| Nicotine replacement                     | Offering nicotine cessation aids for tobacco use       |
|  | disorder management.                                   |
| MOUD Initiation in OUD                   | Starting medications for opioid use disorder to        |
|  | support recovery and reduce mortality.                 |
| MAUD in AUD                              | Utilizing medications to treat alcohol use disorder as |

| Recovery support services                   | Assistance with housing, vocational training, and employment to foster stability.             |
|---|---|
| Peer mentor or recovery coach               | Connecting patients with mentors or coaches who have lived experience in recovery.            |
| Discharge planning                          | Developing personalized plans for continuity of care post-treatment.                          |
| Aftercare/continuing care                   | Ongoing support services following initial treatment to prevent relapse.                      |
| Overdose prevention planning                | Strategies and education, including naloxone access, to reduce overdose risk.                 |
| Case Management                             | Coordinated care among providers and support services to address client needs.                |
| Social skills development                   | Programs to build and strengthen interpersonal and coping skills.                             |
| Domestic violence assessment and management | Screening, intervention, and referrals for those impacted by interpersonal violence.          |
| Transportation Assistance                   | Helping patients access treatment and support services by addressing transportation barriers. |

## **Licensed Societies Support Them**

**MEDICAL** 

#### **BEHAVIORAL HEALTH**





American Academy of Addiction Psychiatry (AAP)
Licensed Mental Health Counselors (LMHC)
Licensed Professional Counselors (LPC)
Licensed Clinical Social Workers (LCSW)
Licensed Marriage and Family Therapists (LMFT)
Licensed Addiction Counselors
Social workers
Psychologists.

## **ACCREDITATION & CERTIFICATION**







 Both the Joint Commission and CARF offer voluntary ACCREDITATION of behavioral health treatment programs.  CARF ASAM CERTIFICATION adds an extra layer specific to substance use disorders

## How to Identify Reputable Programs

- Review treatment programs for:
  - Licensure status
  - Accreditation/Certification status
- Make sure your clients are screened for the right environment (ASAM Criteria)
- Ensure programs use validated SUD and mental health screening tools
- Ask about monitored metrics and criteria for client advancements in programming
- Ask about use of LICENSED/Credentialed staff in client assessments and treatments
- Ensure there are warm handoffs at program discharge to next level of care

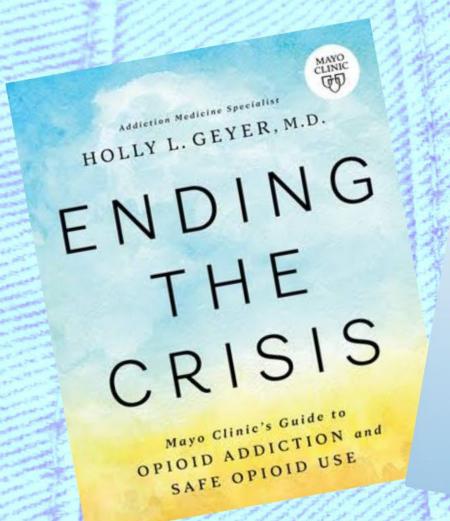
# How do we END THIS?

- 1. Start with prevention
- 2. Understand the biology that keeps them trapped
- 3. Treat the whole person, not just a disease
- 4. Know recovery is within reach!

# We May Get ONE Shot to Get This Right



## **Back Pocket Resources**



Mayo Clinic Opioid Resource Center

ASAM.org

SAMHSA.gov

geyer.holly@mayo.edu @hollygeyermd













#### To register for continuing education for today's webinar:

Physicians, physician assistants, nurses, nurse practitioners, dentists, pharmacists, other: knockoutday.drugfreenj.org/nov13

EMT: KnockOutDay.DrugFreeNJ.org/EMT

Athletic Trainers: KnockOutDay.DrugFreeNJ.org/Trainers

#### **UPCOMING WEBINAR**

Reexamining the Opioid Crisis: A Year in Review 11 a.m. Thursday, December 4, 2025
Register at KnockOutDay.DrugFreeNJ.org/events

