The Evidence for Addiction as a Disease and the Rationale of Medications for Opioid Use Disorders

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Patricia Pade, MD, FASAM
Opioid Remediation Collaborative of New Mexico

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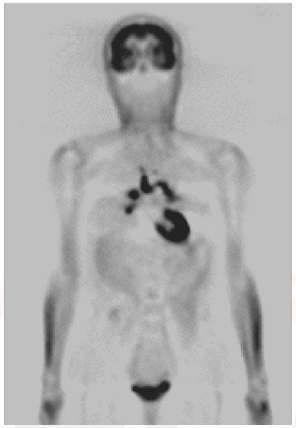
ADDICTION

MEDICAL



Neurotoxicity
Aids
Cancer
Mental illness

SOCIAL

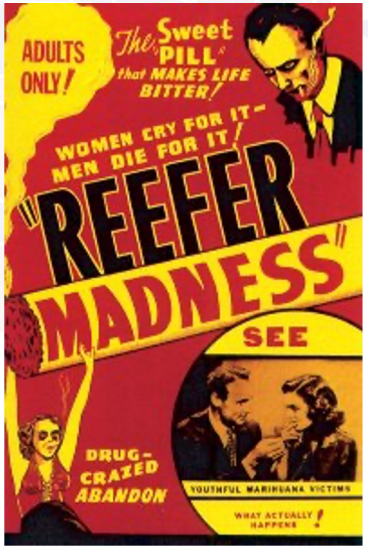
Homelessness
Crime
Violence

ECONOMIC

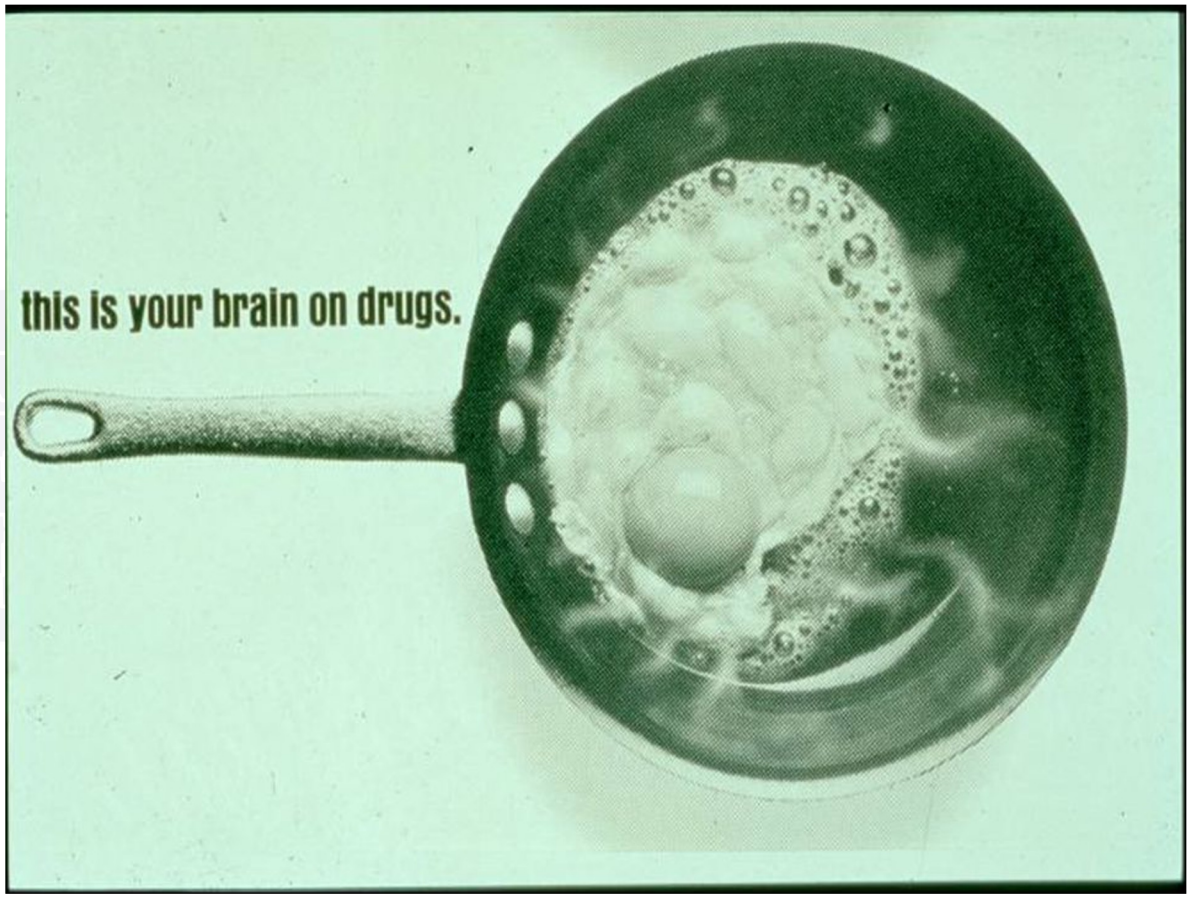
Health care
Productivity
Accidents

YES, IT CAUSES PROBLEMS – BUT IS IT A DISEASE?

ADDICTION LONG THOUGHT TO BE A MORAL FAILING.
ADDICTS WERE WEAK-WILLED, EVIL.



Your Brain on Drugs in the 1980's

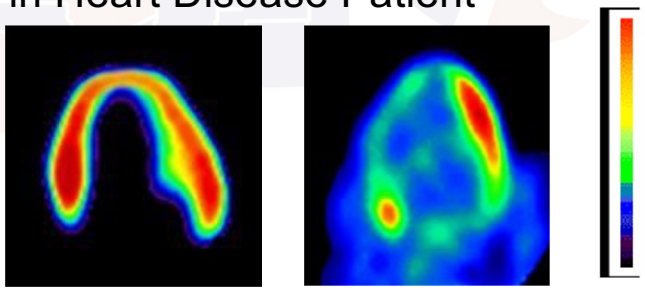


ADVANCES IN SCIENCE HAVE REVOLUTIONIZED OUR FUNDAMENTAL UNDERSTANDING OF DRUG ABUSE AND ADDICTION.

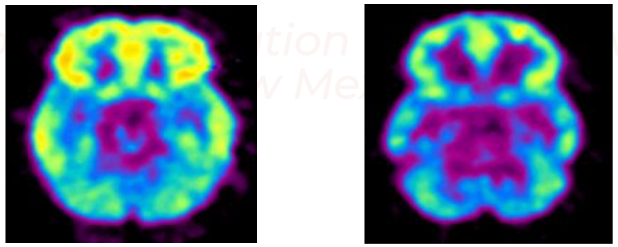
Addiction is Like Other Diseases…

- It has a distinct set of symptoms
- It has a predictable natural course and outcome if untreated
- It has risk factors, diagnostic criteria, recommended treatment
- In addition, addiction is treatable.

Decreased Heart Metabolism
in Heart Disease Patient

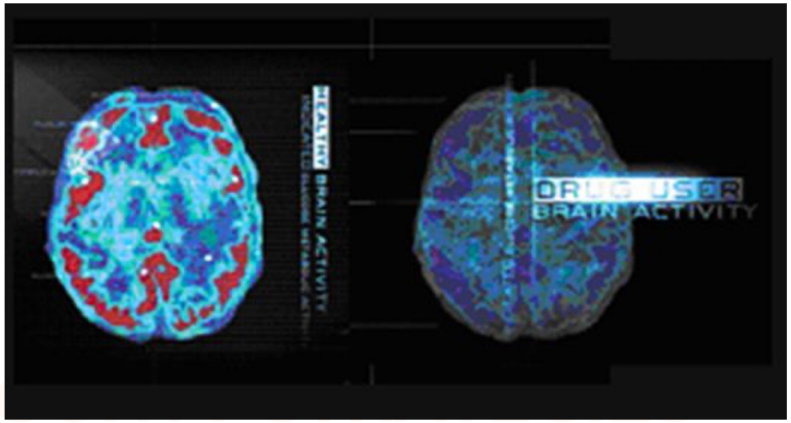


Decreased Brain Metabolism
in Drug Abuser



NIDA

WHAT IS ADDICTION? ADDICTION IS A BRAIN DISEASE



- THAT DEVELOPS OVER TIME
- THAT STARTS AS VOLUNTARY DRUG USE
- THAT LEADS TO UNCONTROLLABLE DRUG CRAVING AND USE
- THAT CHANGES BRAIN STRUCTURE AND FUNCTION
- THAT INTERFERES WITH A PERSONS FUNCTIONING IN FAMILY AND SOCIETY
- THAT LEADS TO SERIOUS MEDICAL CONSEQUENCES

NO ONE WANTS TO BE A DRUG ADDICT- THEY WANT TO SAY "NO" BUT THEY CAN'T- IT'S NOT A MORAL FAILING OR A RESULT OF "WEAK WILL"- IT'S A COMPULSIVE BEHAVIORAL DISORDER

WHY DO PEOPLE TAKE DRUGS IN THE FIRST PLACE?

<u>To Feel Good</u>

To have novel
feelings
sensations
experiences
AND to share them

To experience euphoria

<u>To Feel Better</u>

To lessen:
anxiety
worries
fears
depression
hopelessness

<u>To do better</u>: enhance performance

<u>Peer pressure</u>: to fit in

NIDA

THE DISEASE OF CHEMICAL DEPENDENCE

COMPLEX DISEASE INVOLVING CONFLUENCE OF A NUMBER OF INTERACTIVE FACTORS:

- AGENT – DRUG CHARACTERISTICS
- ENVIRONMENT – OCCUPATION, INTERPERSONAL STRESSES
- HOST – GENETIC PREDISPOSITION, CO-MORBID PSYCHIATRIC AND MEDICAL CONDITIONS

RISK OF DEVELOPING DEPENDENCE

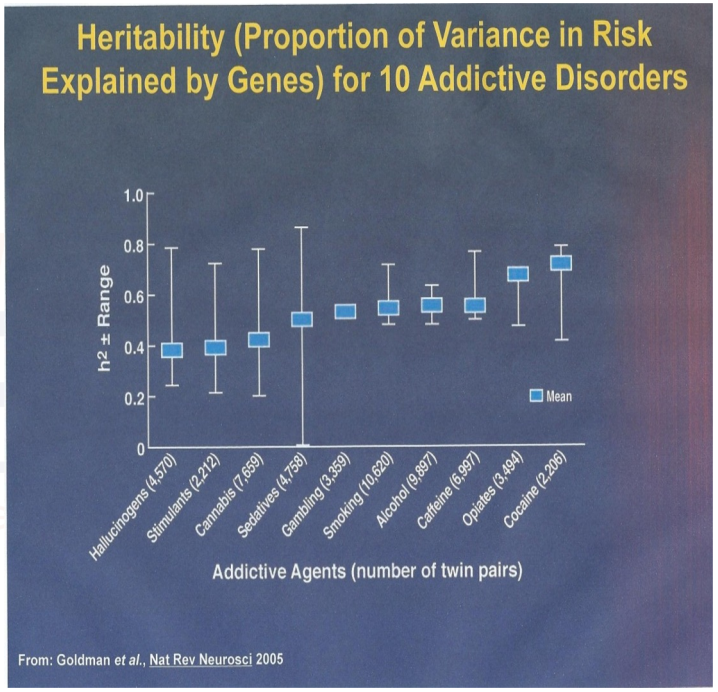
TABLE 3.4 Prevalence of Drug Use and Dependence[a] in the General Population

Drug Category	Proportion That Have Ever Used (%)	Proportion of Users That Ever Became Dependent (%)
Tobacco	76	32
Alcohol	92	15
Marijuana (including hashish)	46[b]	9
Anxiolytics (including sedatives and hypnotic drugs)	13	9
Cocaine	16	17
Heroin	2	23

[a]Diagnosis of drug dependence used in this study based on DSM-III-R criteria.[2]
[b]The percentage of people who ever used marijuana is higher than that reported by the National Household Survey on Drug Abuse (32%), probably due to different survey methods (for discussion, see Kandel, 1992[76]).
SOURCE: Adapted from Table 2 in Anthony and co-workers (1994).[8]

WHY ME?

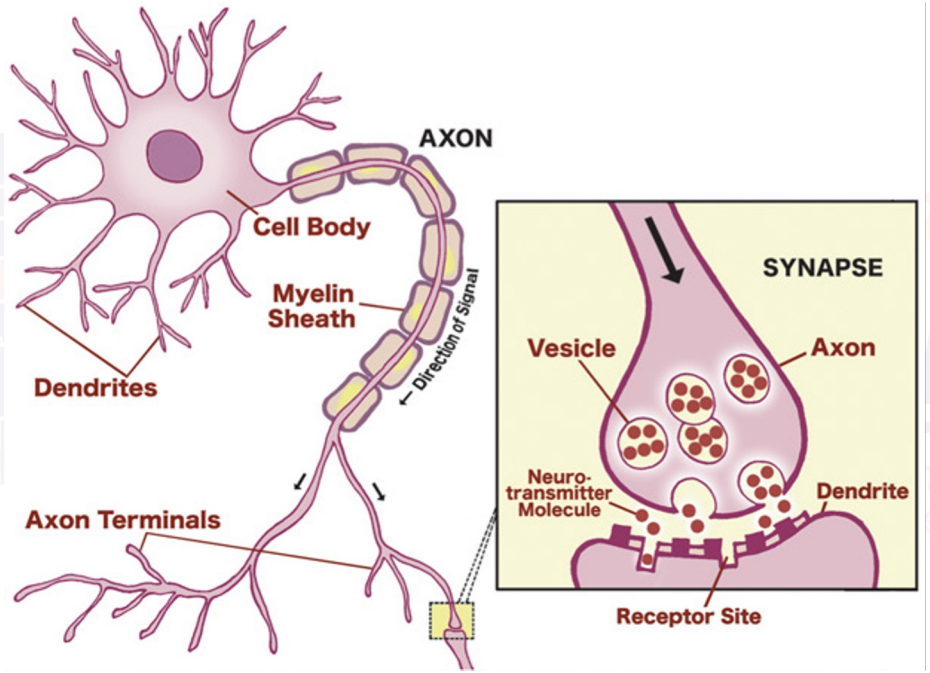
- Genetic vulnerability
- Environmental factors
- Comorbid psychological conditions
- Stresses
- Adverse childhood events
- Access



NEURONS IN BRAIN

100 BILLION NEURONS
IN HUMAN BRAIN

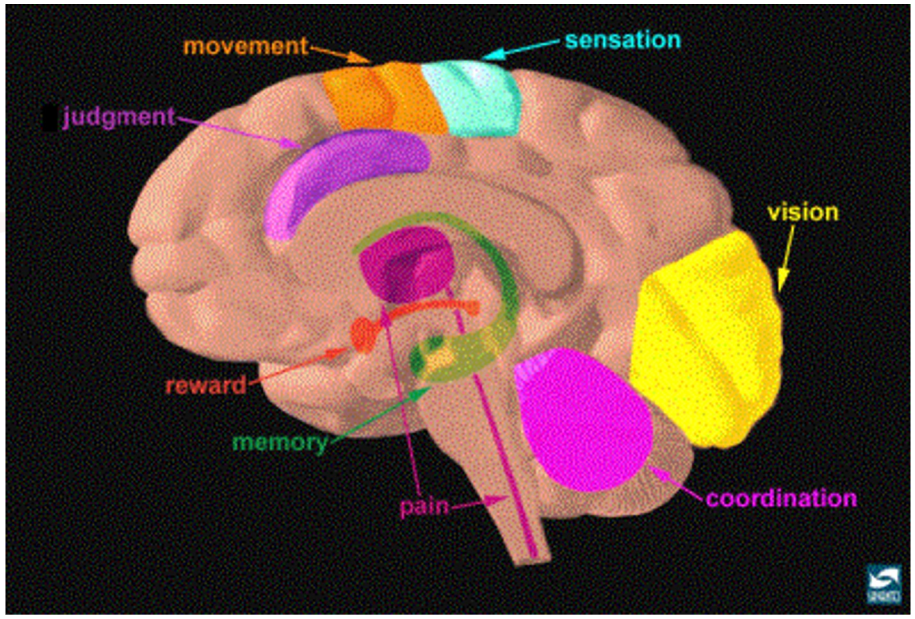
THE COMMUNICATORS - NEURONS



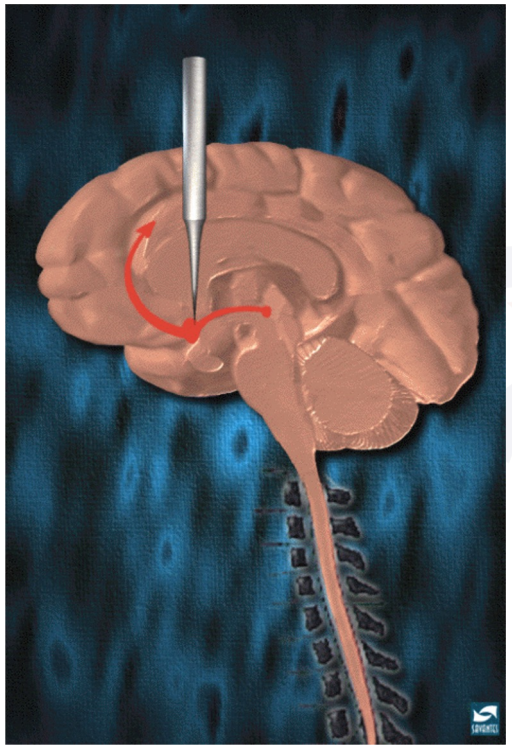
Depending on the neurotransmitter the next neuron will either fire (become activated) or be inhibited.

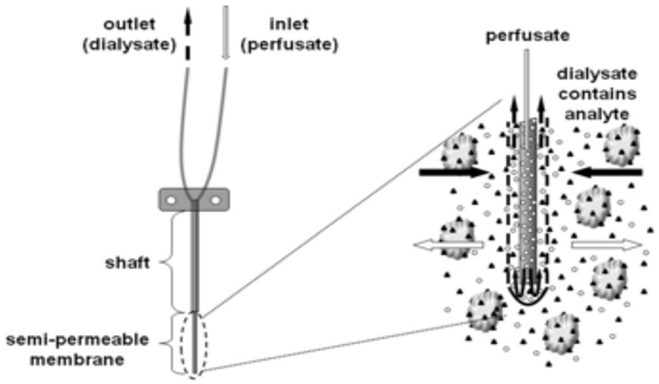
THE BRAIN'S REWARD CENTER

- REWARD CENTER IS REGION OF BRAIN THAT RESPONDS TO SENSATIONS OF PLEASURE
- DOPAMINE NATURALLY STIMULATES THE REWARD CENTER
- MANY DRUGS SIMULATE THIS PROCESS



DISCOVERY OF REWARD PATHWAY

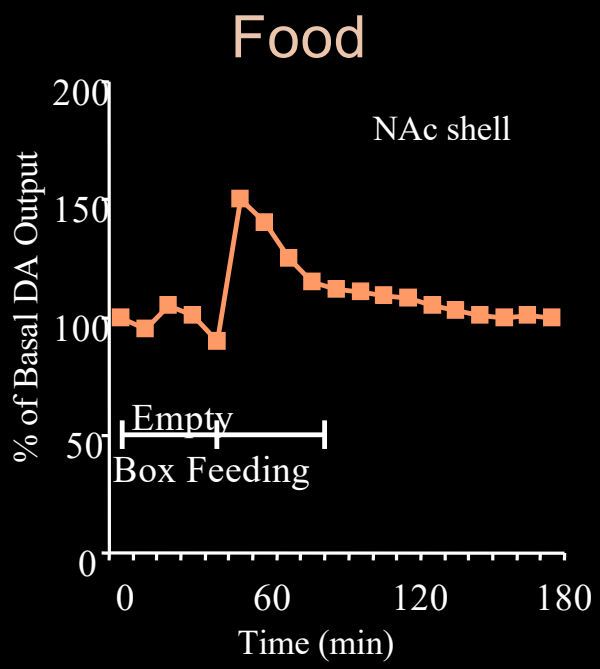


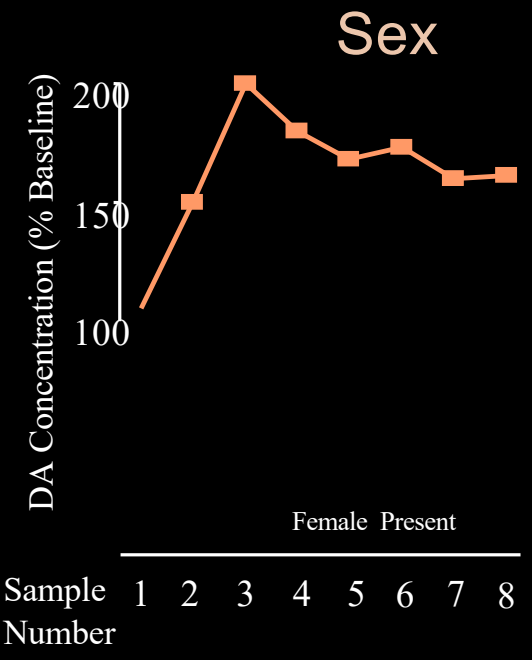


Dopamine was measured – with significant elevations in the area of the probe with electrical stimulation.

ACTIVATION OF THE REWARD PATHWAY – THESE RELEASE DOPAMINE IN THE REWARD PATHWAY

Natural Rewards Elevate Dopamine Levels

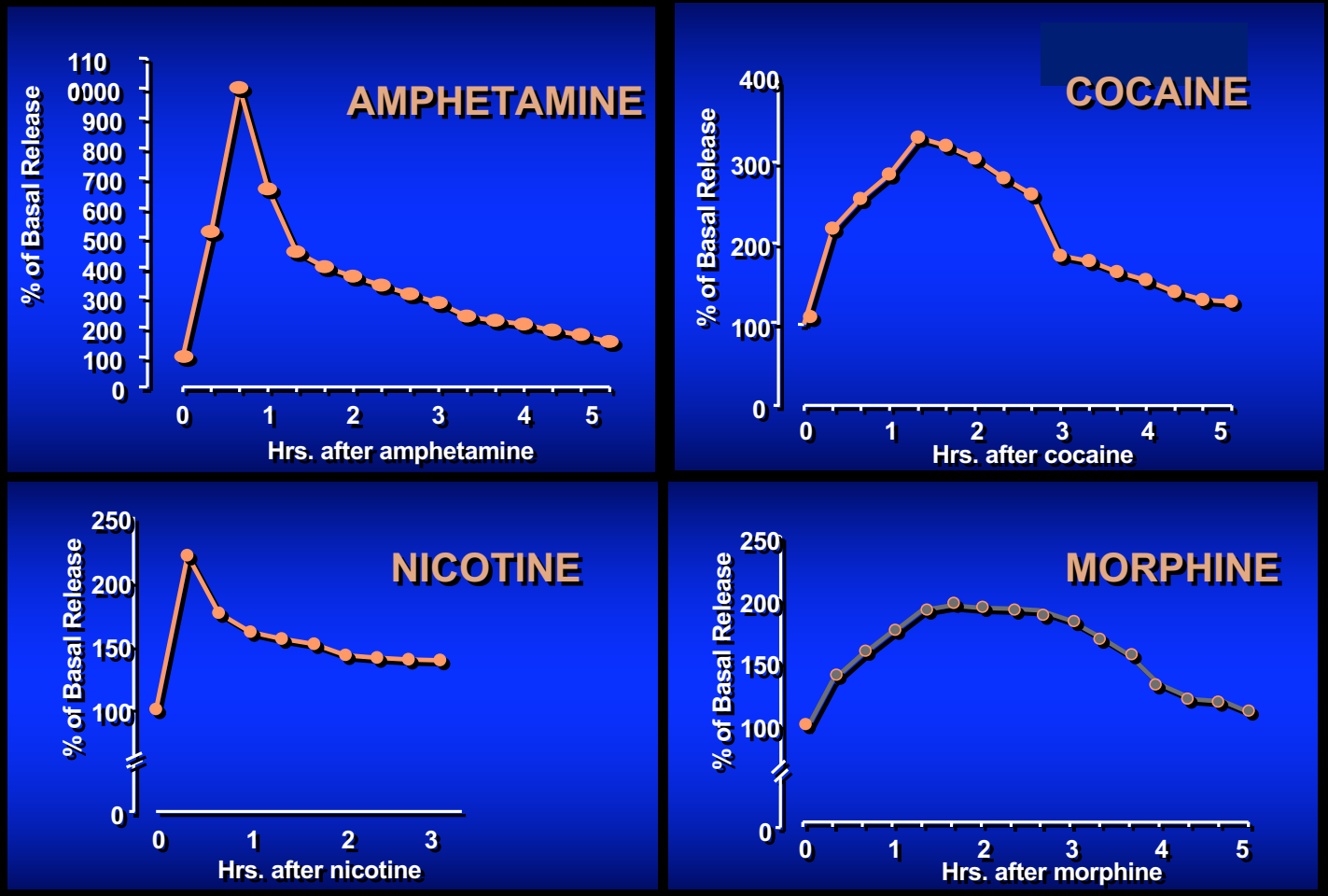




Di Chiara et al., Neuroscience, 1999.,Fiorino and Phillips, J. Neuroscience, 1997.

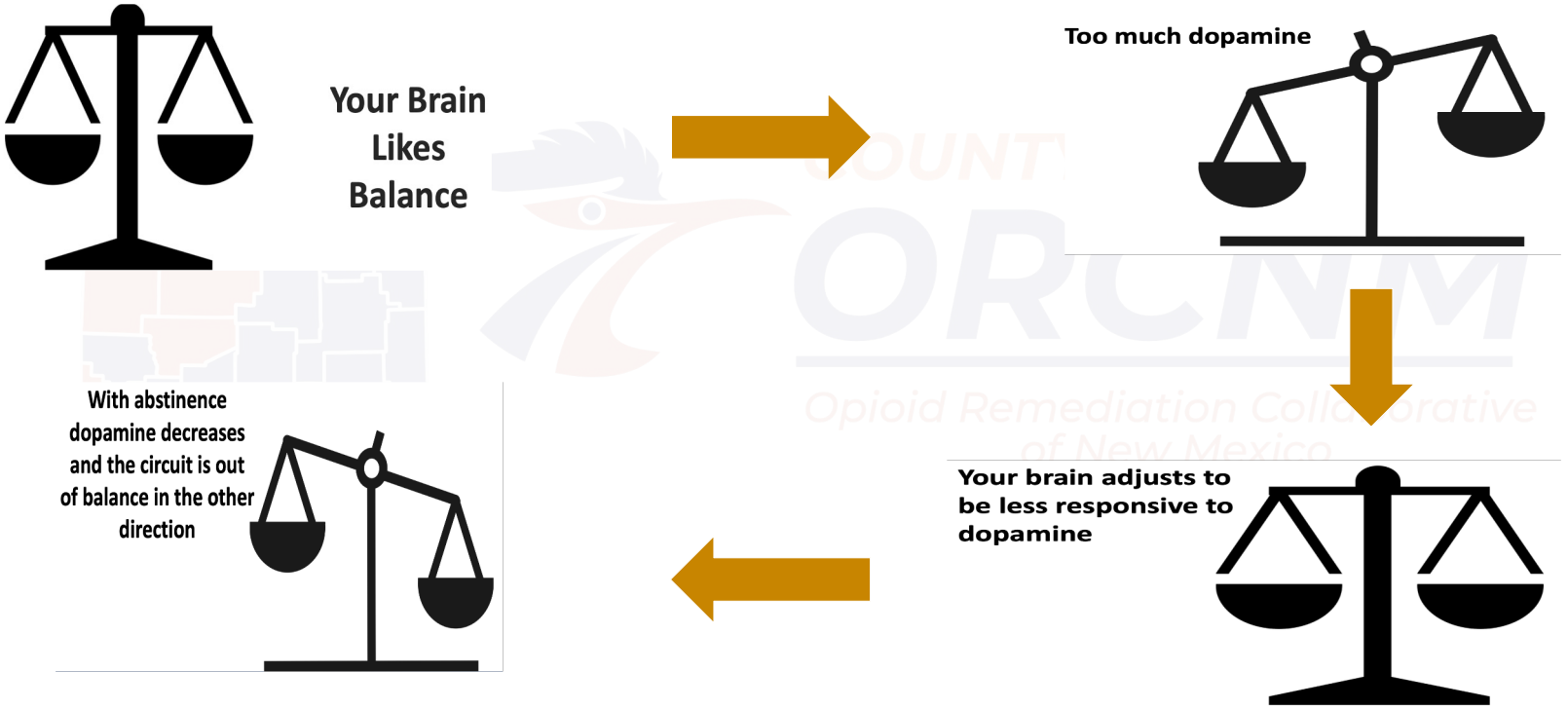
NIDA

Drugs Elevate Dopamine Levels More or For Longer

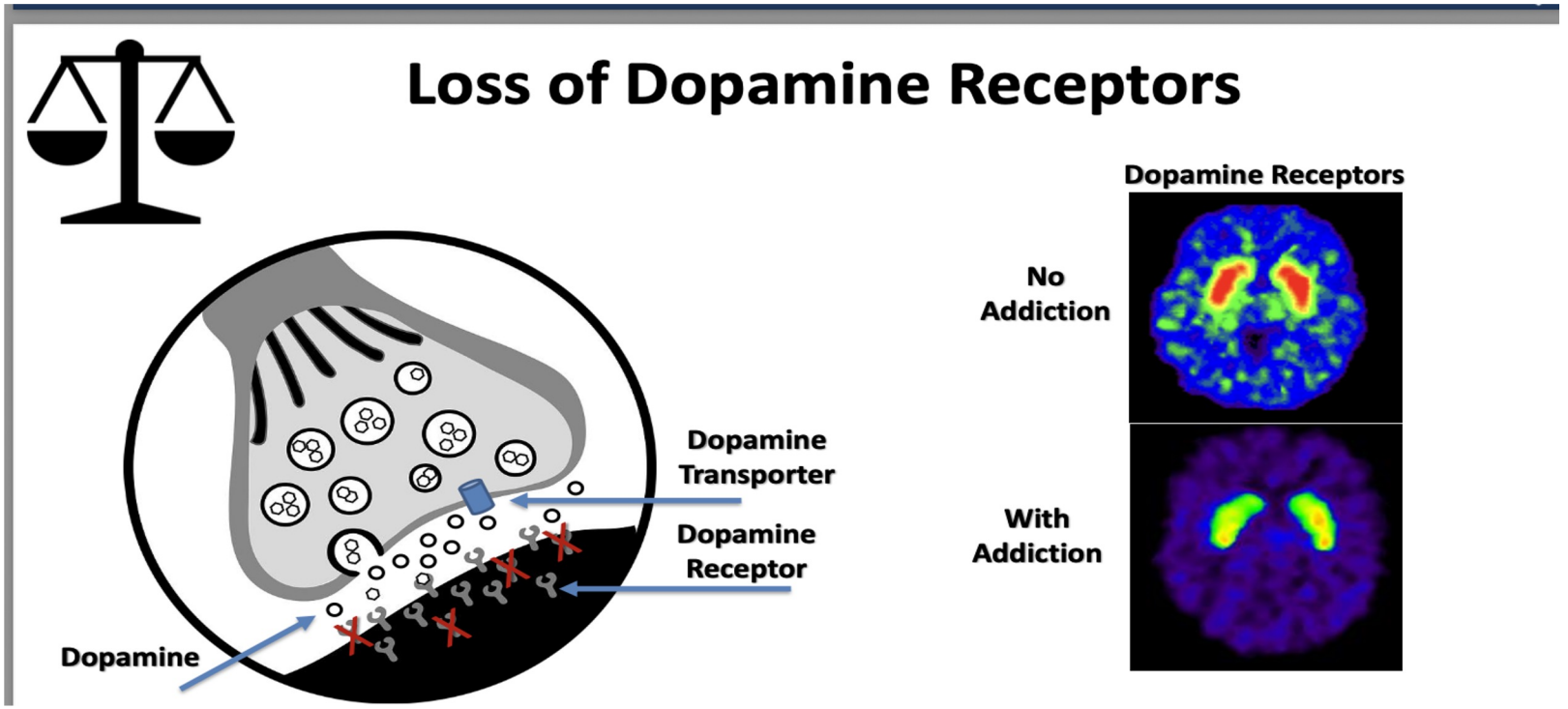


Source: Di Chiara and Imperato

The Brain operates by balancing neurotransmitters like Dopamine

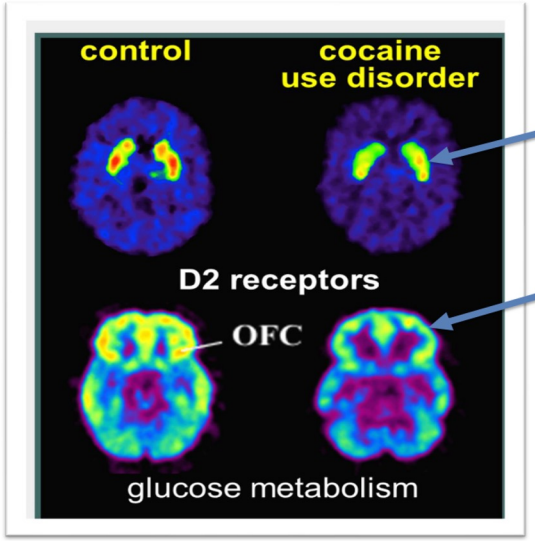


How does the brain try to achieve balance with chronic drug use?



Volkow ND, et al. J Neurosci 2001

These Brain Changes persist for months after abstinence and include other areas of the brain!



Decreased Dopamine Receptors

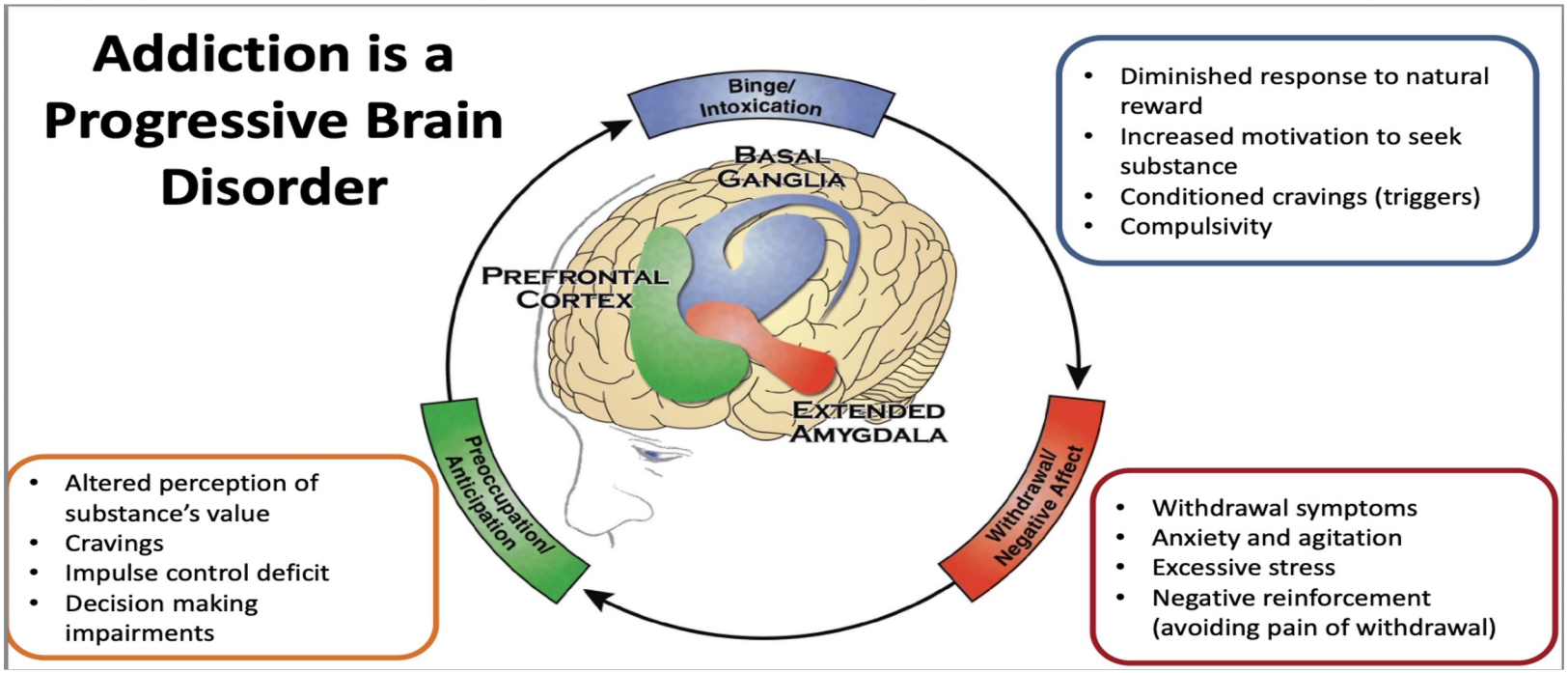
Decreased Activity in the Prefrontal Cortex

Poor Impulse Control and Decision Making

While this study involves cocaine, opioids also have these changes

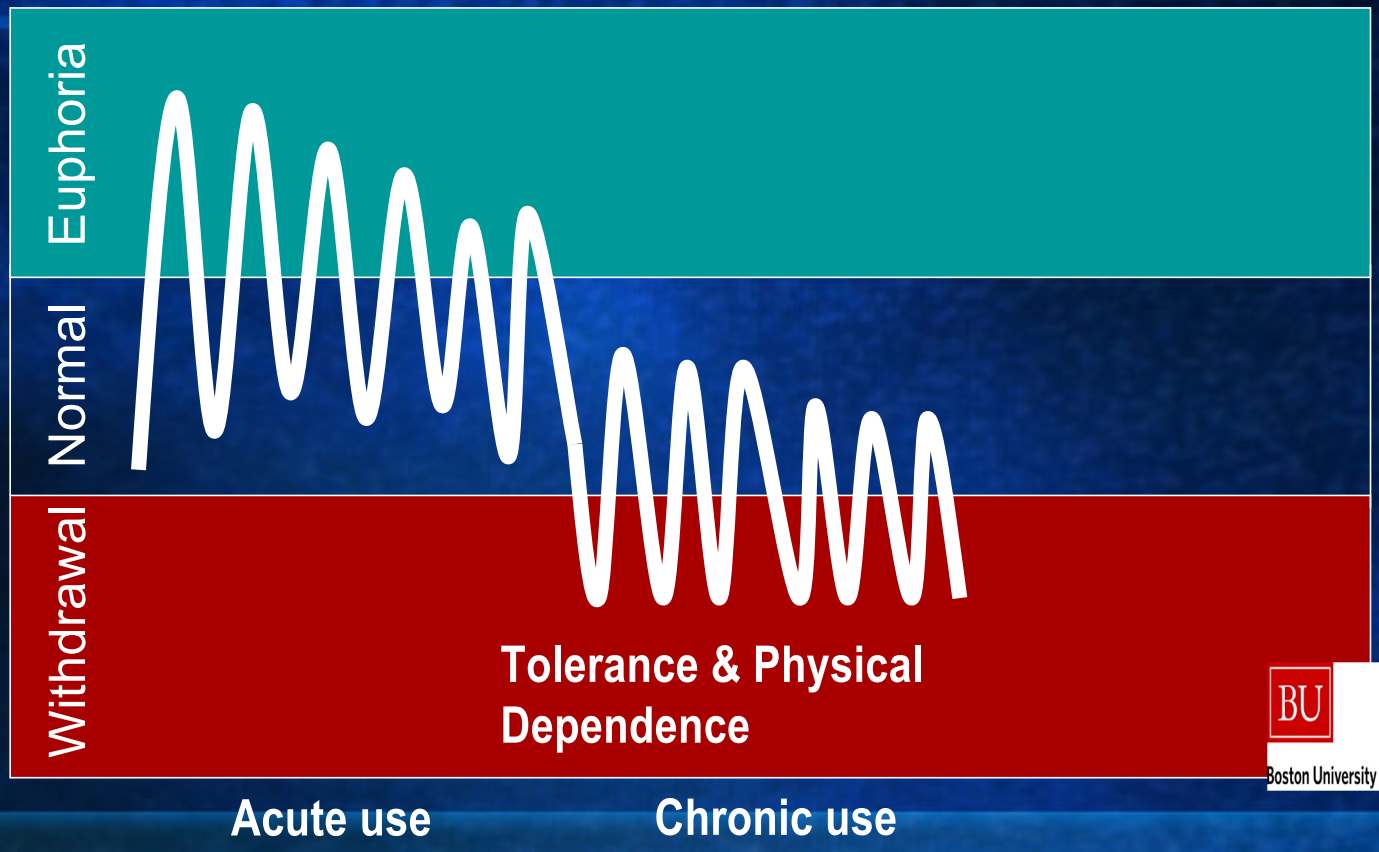
Volkow et al., AJP 158(3):377-382, 2001.

Other circuits of the brain are altered in addiction.



https://addiction.surgeongeneral.gov/sites/default/files/chapter-2-neurobiology.pdf

Natural History of Drug Dependence



BU Boston University School of Medicine

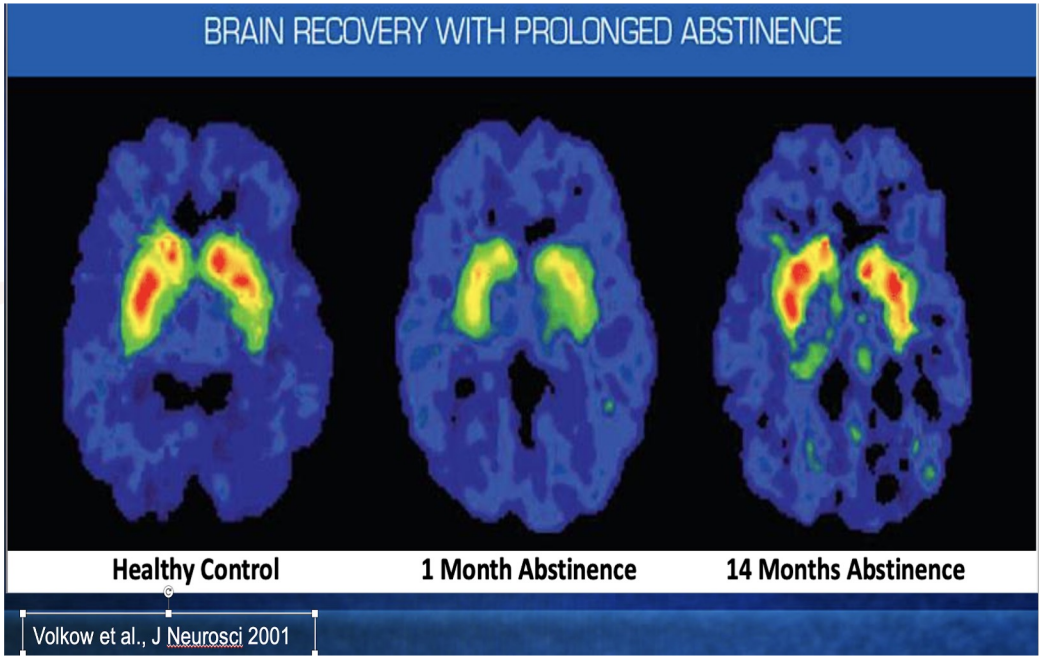
Treatment and Recovery

-These folks are miserable!

-Brain doesn't recover with withdrawal alone – it takes a long time which can vary in patients.

-The underlying risk factors for the disease also needs to be considered and treated.

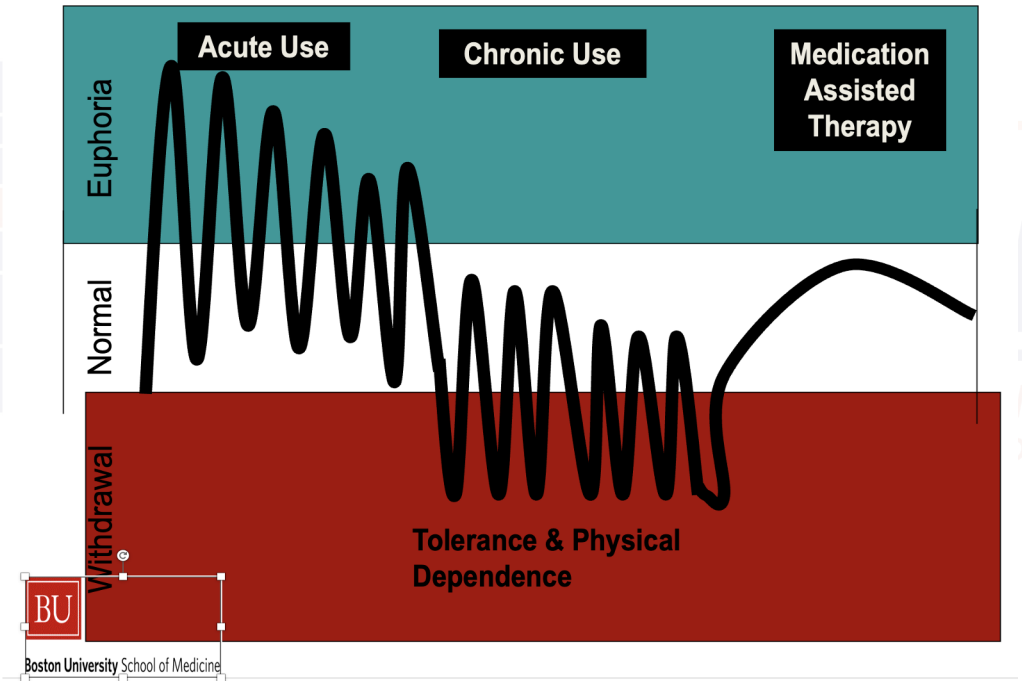
-Goals of treatment need to be clear and address all the stages of recovery.



Opioid Use Disorders Have Effective Medication Treatment unlike many Substance Use Disorders

Methadone, Buprenorphine and Naltrexone!

Goal is to stabilize symptoms while the brain recovers



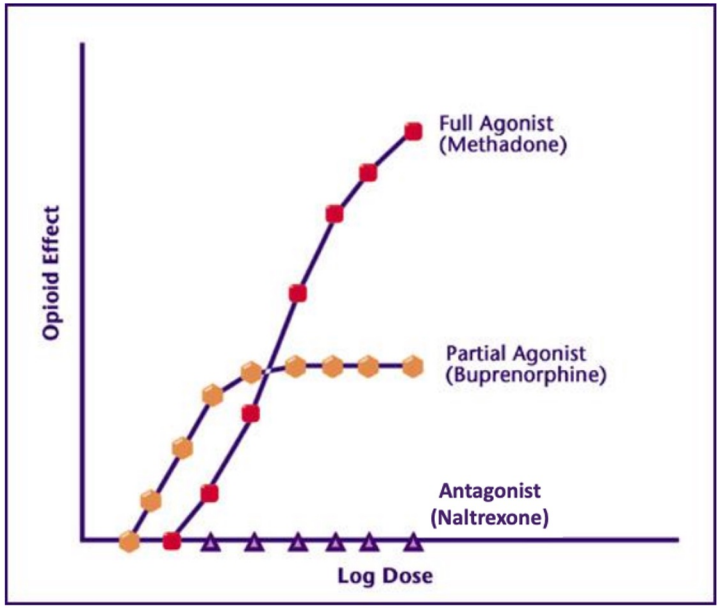
Medications are effective and save lives

Opioid Use Disorder Medications DECREASE:

- Opioid use
- Opioid-related overdose deaths
- Criminal activity
- Infectious disease transmission

And INCREASES

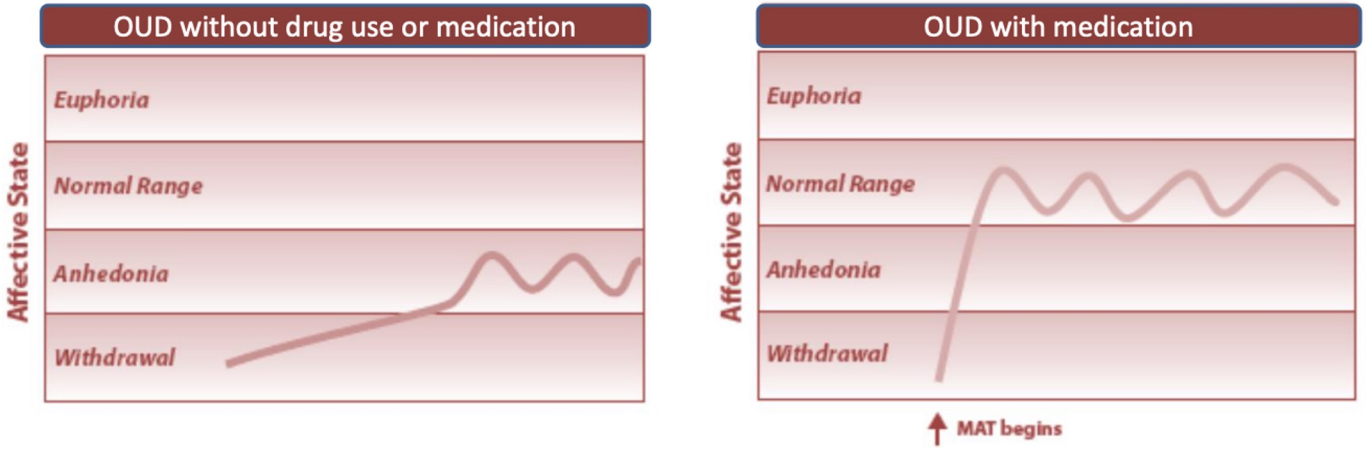
- Social functioning
- Retention in treatment



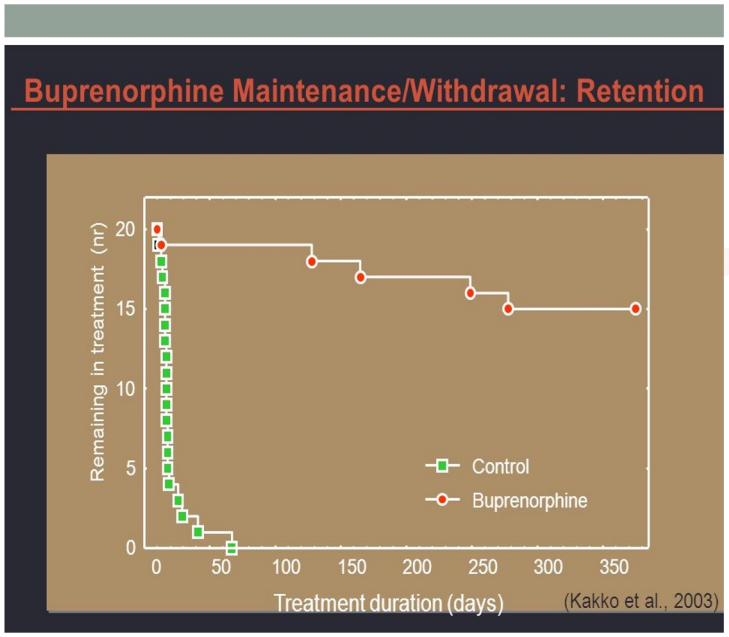
Addressing Misconceptions

Methadone and buprenorphine are titrated for each patient to restore balance to their brain's reward circuit (NOT to produce a high)

- Dosage used helps to reduce opioid cravings and withdrawal
- These medications allow the patient's brain to heal while they work towards recovery.

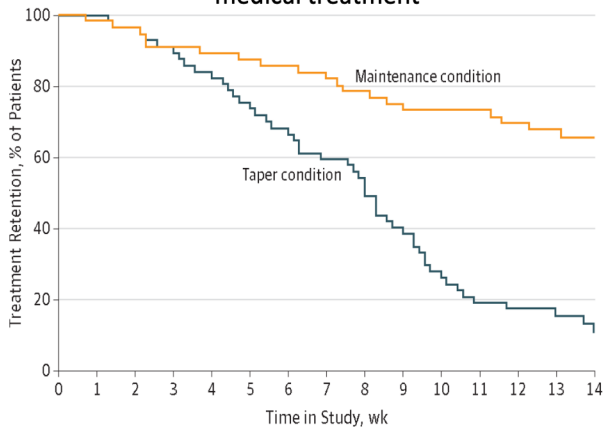


Goals – Retention in Treatment



Sustained Recovery Requires *Sustained Care*

Opioid addiction is a chronic brain disorder that requires sustained medical treatment



Goals of Overall Treatment – beyond acute withdrawal.

Stage	Clinical Goal	Effective Tools for Achieving Goal	Time Frame
Protection	Prevention of overdose and infectious diseases	Medication for OUD (MOUD)	Immediate and continuing
Remission from OUD	Significant, sustained reduction in OUD symptoms	MOUD Behavioral therapy AA or NA attendance	1–6 mo: Early remission 7–12 mo: Sustained remission >12 mo: Stable remission
Recovery from All Substance Use Disorders (SUDs)	Significant, sustained reduction in all SUD symptoms and improvement in health and social functioning	MOUD Behavioral therapy Additional medical and social services, as needed	1–6 mo: Early recovery 7–12 mo: Sustained recovery >12 mo: Stable recovery

Recently Published – MOUD in County Jails

Those who received MOUD in jail:

- ➔Greater continuity of treatment post release
- ➔Decreased overdose-related mortality post release
- ➔Decreased death rate post release from any cause
- ➔Decreased rate of re-incarceration

Is MOUD Recovery?

“Recovery status is best defined by factors other than medication status. Neither medication-assisted treatment of opioid addiction nor the cessation of such treatment by itself constitutes recovery. Recovery status instead hinges on broader achievements in health and social functioning—with or without medication support.”

—Recovery experts A. Thomas McLellan and William White

Options to treatment

Last thought I tell patients:

YOU DID NOT CAUSE THIS BRAIN DISEASE.

… **BUT YOU ARE RESPONSIBLE FOR YOUR RECOVERY.**

Questions?

Get access to more provider resources and trainings online.