

# What Are We Talking About Today ?

Addiction and the Brain

The Wide World of Dopamine

The Complex World of Withdrawal

Brain Recovery and Return to Use: Implications for Treatment

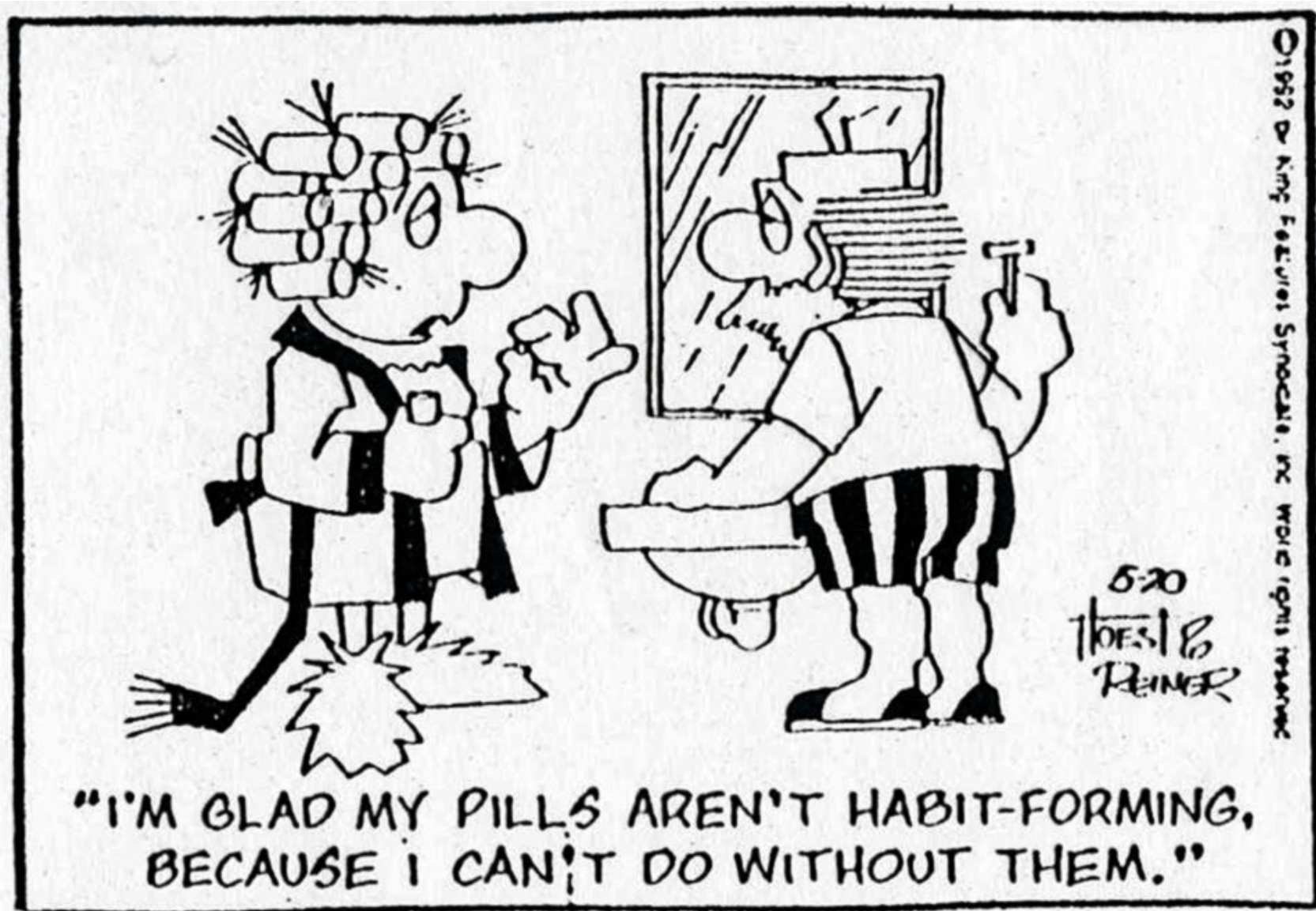
Harm Reduction



# Addiction and the Brain

WHY IT'S SO HARD TO JUST SAY NO





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In my lowest moments, the only reason I didn't commit suicide was that I knew I wouldn't be able to drink any more if I was dead.

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~ERIC CLAPTON, *CLAPTON: THE AUTOBIOGRAPHY*



# Substance Use Disorders (SUD) are Chronic Medical Conditions

“From a neurobiological perspective, drug addiction is a disease of the brain, and the associated abnormal behavior is the result of dysfunction of brain tissue.”

~Christopher Cavacuiti – *“Principles of Addiction Medicine: The Essentials”*



# What is Addiction? ASAM After....

UPDATED October 2019:

*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.*





# Chronic Disease

**Addiction** is a **chronic disease** like other **chronic diseases** such as type II diabetes, cancer, and cardiovascular **disease**. Human studies of **addictive** behaviors have clearly implicated both environmental and genetic influences, as well as interactions between the two.

Like other chronic illnesses, the condition must be continually managed to reduce the risk of relapse. It is a chronic disease for which many affected individuals receive no intervention or detoxification without subsequent treatment. As with all chronic diseases, substance dependence has no cure and is characterized by relapse requiring long term care. Medical and psychiatric co-morbidities are the rule rather than the exception.

All conditions require life-long management; interventions and monitoring don't stop after initial interventions or services.

# Chronic Disease Management

**Screenings** – Identifying risk factors through screening can help prevent disease and lessen the severity of illness through early detection.

**Checkups** – Monitoring and learning how to manage chronic disease

**Coordinating Treatment** – PCP's know their patients' history and coordinates care which avoids redundant medical tests and procedures, unnecessary ER visits, hospitalizations, and medication errors. Can also help manage medications.

**Patient education** – PC Teams help patients understand and work towards target numbers for health measures such as blood pressure, cholesterol and weight, improving health outcomes.

*These measures are not only management of chronic illnesses, but preventative measures.*

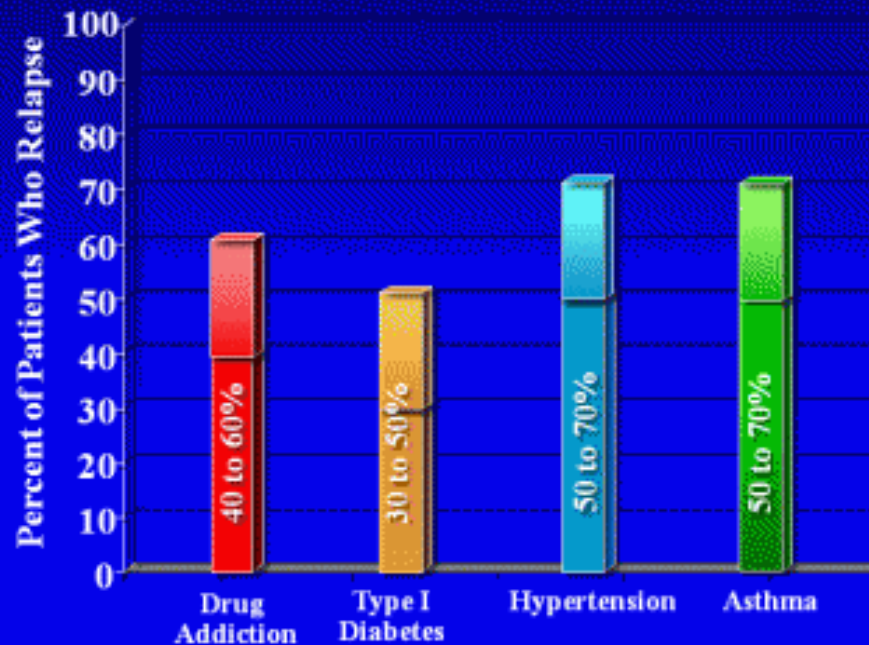




# Chronic Illness

Rates of reoccurrence and recovery in the treatment of addiction are very similar to those of other chronic medical diseases

## *Relapse Rates Are Similar for Drug Addiction & Other Chronic Illnesses*



McLellan et al., JAMA, 2000.

NIDA

“The Idea that somehow, someday he will control and enjoy his drinking is the great obsession of every abnormal drinker”.

Big Book of Alcoholics Anonymous  
pg. 30



**A**

Montana Primary Care Association

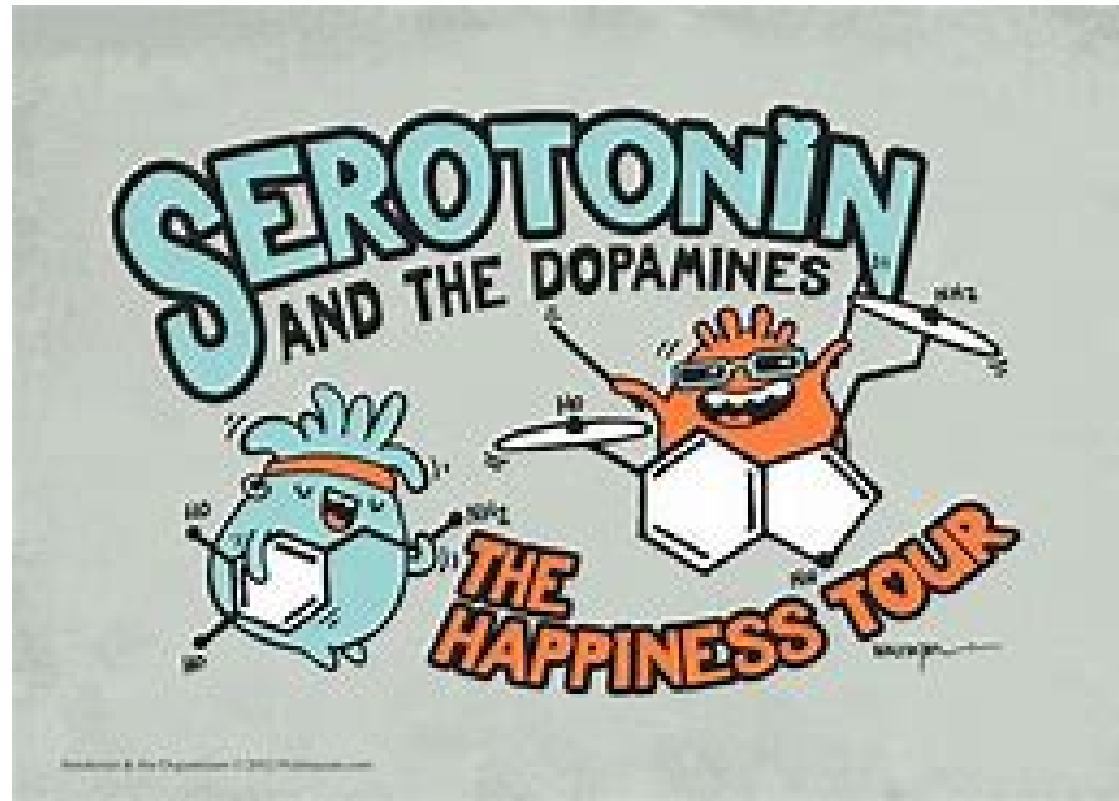


# Genetic Vulnerability to Addiction

Family History - Genetic Factors – it is estimated that 40% to 60% of the vulnerability to addiction is attributed to genetic factors

Environmental – “May include low socioeconomic class, poor parental support and drug availability” – ACE scores



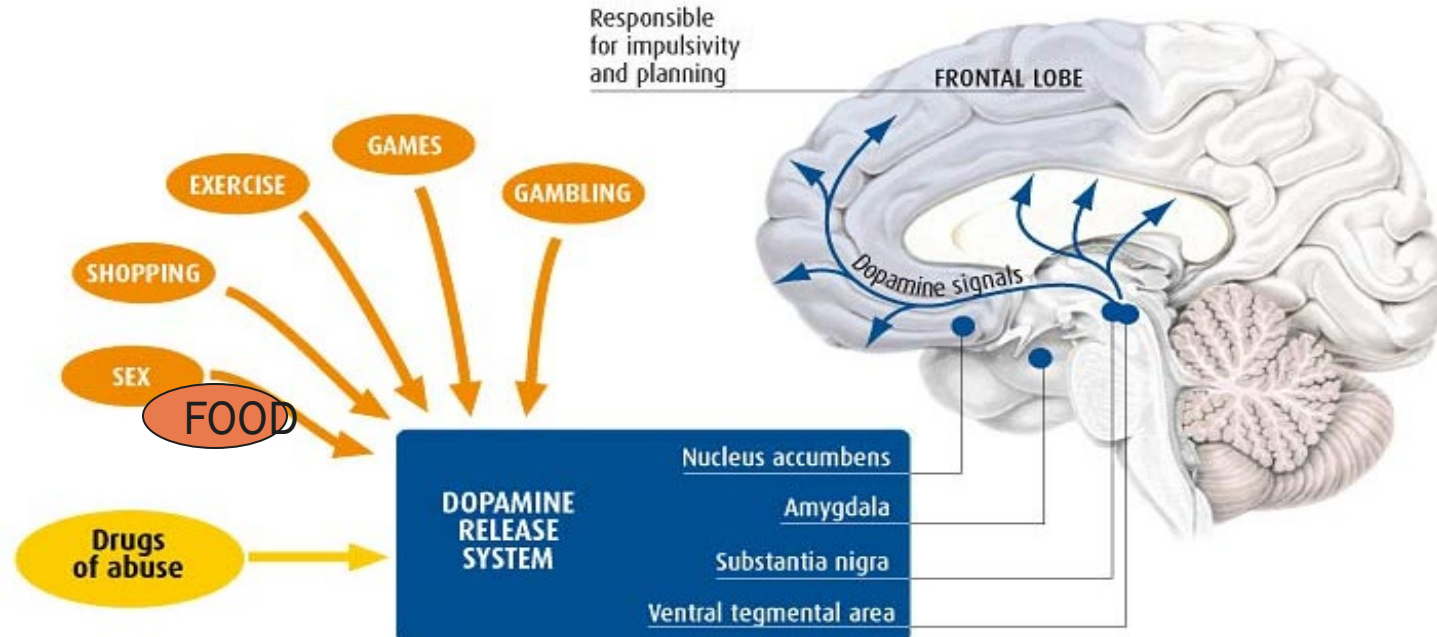


# The Wide World of Dopamine



# Dopamine Mediates Pleasure

Before 1990, almost all data suggested that dopamine signaled pleasure, whether in response to drugs or any other reinforcing activity.



# What Does Dopamine Really Do?

DA is a **'salience'** indicator. It tells us and then helps us to remember what we should focus on.

With repeated drug use, natural reinforcers release less dopamine while drugs don't release less.

As a result, there is a separation between the decreased 'salience' of natural rewards and the increased 'salience' of drugs

The brain becomes less active in the normal state.

'Hypofrontality' develops with chronic drug use.





EPISODE ONE:

“THE HIJACKER”

# Chronic Use Will Eventually Become Compulsive Use

The 'non-decremental stimulation of dopamine transmission' makes the connection between drugs and the stimuli associated with drugs stronger.

**Reward-related learning** is more powerful if the reward is a drug. Stimuli that predict drugs have greater **incentive value**. They can control behavior more strongly than stimuli associated with natural rewards.



# Chat Out ! .....

Why do some people who use substances become addicted and others don't?

Is there something different about their brains?

What other factors might lead to the development of an addiction?



# Conclusions

Are chronic and relapsing illnesses that produce profound changes in neurocircuits

Profoundly reduce an individual's ability to respond to natural reinforcers

Profoundly change an individual's ability to think, perceive, feel, and concentrate

Can be ameliorated by positive social and emotional environments



I AM SOOOO NOT ADDICTED TO MY SMARTPHONE, BECAUSE I HAVE AN APP THAT WARNS ME IF I'M TURNING INTO AN ADDICT AND IT HASN'T GONE OFF YET.



8/26





# The Complex World of Withdrawal





# Acute Withdrawal

THE SIGNS AND SYMPTOMS OF WITHDRAWAL USUALLY ARE THE OPPOSITE OF THE SUBSTANCE'S DIRECT PHARMACOLOGIC EFFECTS

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# ACUTE WITHDRAWAL TIME

## SUBSTANCE

## ACUTE WITHDRAWAL

- Alcohol 5-7 days
- Benzodiazepines 1-4 weeks; 3-5 taper
- Cannabis 5 days
- Nicotine 2-4 weeks
- Opioids 4-10 days; methadone 14-21 days
- Stimulants 1-2 weeks



**Protracted withdrawal** occurs when you have symptoms that last for longer periods of time or reappear after your acute withdrawal should have stopped.



**PROTRACTED WITHDRAWAL**

# Protracted Withdrawal

## *Common Symptoms Across Substances*

Anxiety

Sleep difficulties

Problems with short-term memory

Persistent fatigue

Difficulty concentrating and making  
decisions

Drug cravings

Impaired executive control

Anhedonia

Difficulty focusing on tasks

Dysphoria or depression

Irritability

Unexplained physical complaints

Reduced interest in sex





# Protracted Withdrawal Alcohol



Anxiety, hostility, irritability, depression, mood instability, fatigue, insomnia, difficulties concentrating and thinking, reduced interest in sex, and unexplained physical complaints of pain

Symptoms may last 2 years or longer after the last use of alcohol

Sleep abnormalities can persist for 1 to 3 years after stopping alcohol

- Difficulty falling asleep, decreased total sleep time, and sleep apnea





# Protracted Withdrawal Opiates



Anxiety, depression, and sleep disturbances can last for weeks or months following withdrawal

Fatigue, dysphoria (i.e., feeling down or emotionally blunted), and irritability

Decreased ability to focus on a task

Deficits in executive functions may persist for months



# Protracted Withdrawal Stimulants



Executive function deficits can continue up to 14 months of abstinence

After 14 months abstinence improved performance on motor and verbal learning tasks

Impulse control very slow to recover



# Protracted Withdrawal Benzos

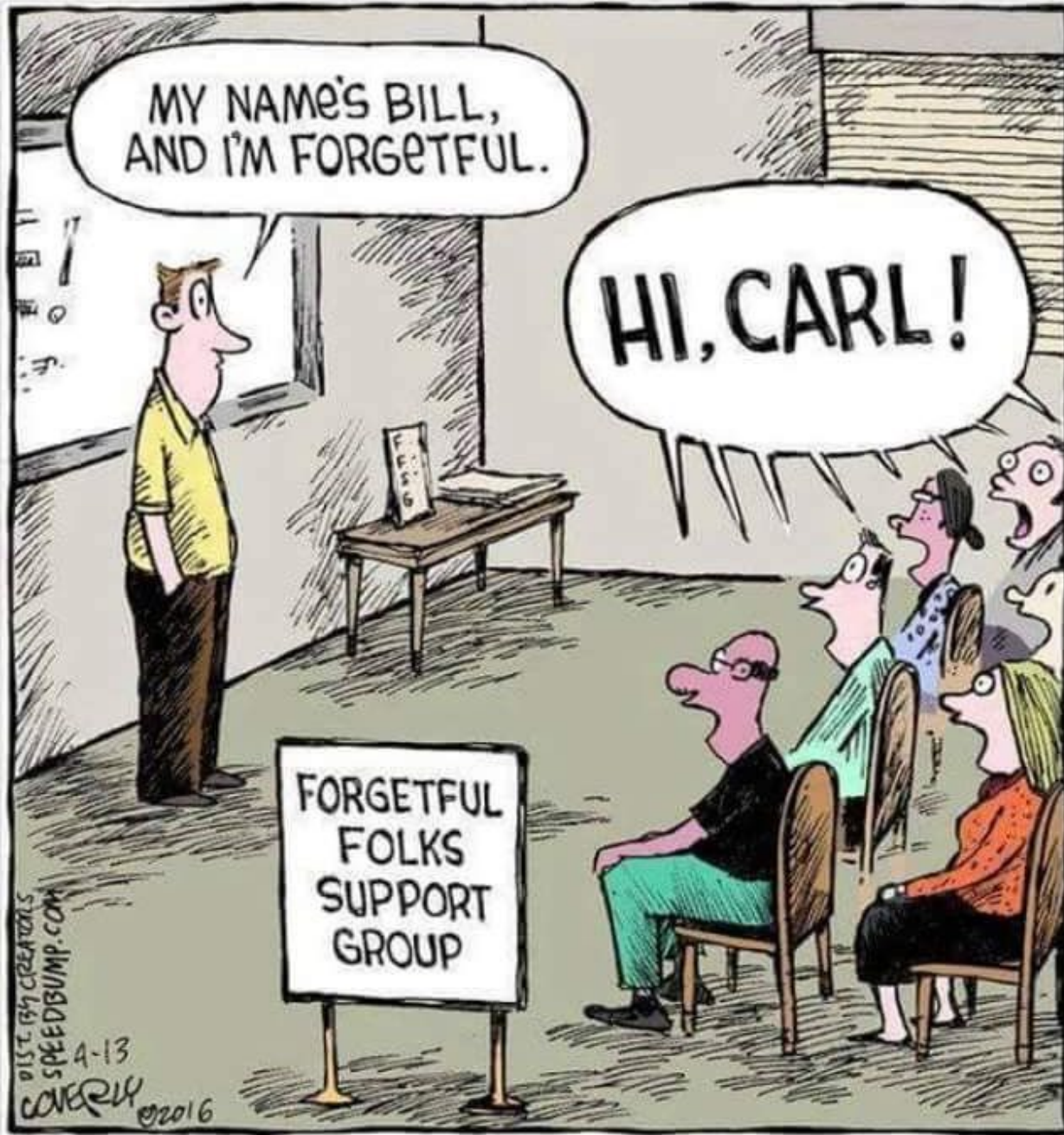
Difficulty distinguishing it from symptom rebound or symptom reemergence

May have no symptoms for a time after stopping benzodiazepine use and then become extremely anxious

Symptoms can mimic disorders such as agitated depression; generalized anxiety, panic, or obsessive-compulsive disorders; and schizophrenia







# Brain Recovery and Return to Use: Implications for Treatment



# What is Living in Recovery?

*A process of change through which individuals improve their health and wellness, live a self-directed life, and strive to reach their full potential.*

**Four major** dimensions that support a life in recovery (co-occ):

- **Health:** overcoming or managing one's disease(s) as well as living in a physically and emotionally healthy way;
- **Home:** a stable and safe place to live;
- **Purpose:** meaningful daily activities, such as a job, school, volunteerism, family caretaking, or creative endeavors, and the independence, income and resources to participate in society; and
- **Community:** relationships and social networks that provide support, friendship, love and hope.

.....NAADAC





# What is a Recurrence?

***A single, short-lived action or use*** in which someone deviates from the goal of abstaining from alcohol and other drugs.

***Multiple use episodes*** occurs when a person learns what triggered use and how to prevent use from happening again.

***Return to Use or Recurrence*** is a series of lapses in which someone gradually loses all control of alcohol or other drug use. The process of becoming dysfunctional in recovery that ends with the renewed symptoms emerging.

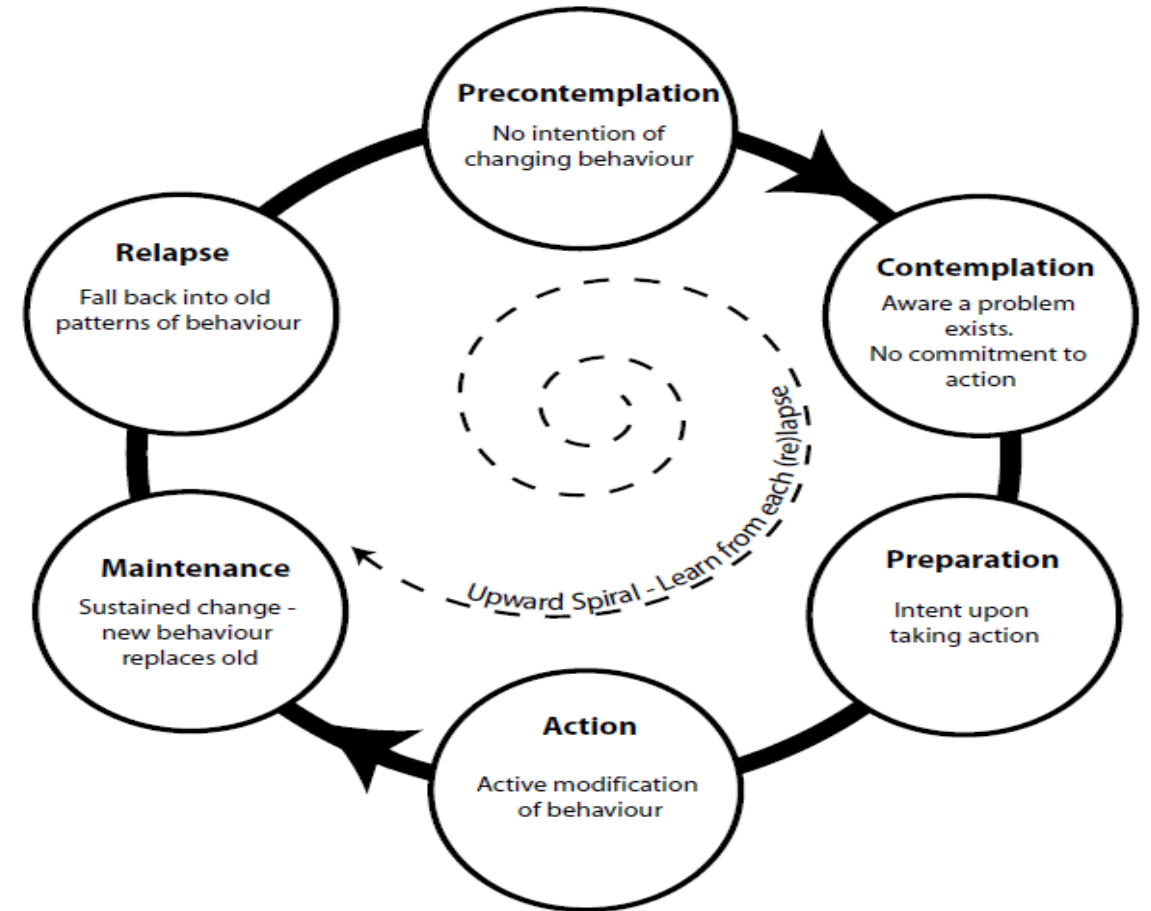
Alan Marlatt, PhD., UW



# Return to Use as Withdrawal Management?

Return to use may happen – of course!!

- RTU can be sequential and result in protracted withdrawal
- Patients will vary in their abilities to remember and process information depending on their stage of recovery



# Stage of Change and Use Patterns

Pre-Contemplation

Contemplation

Determination

Action

Maintenance

Heavy substance use

Attempts at reducing use

Attempts at stopping

Slips



# Closer with Anhedonia

## Anhedonia

- Pleasurable feelings are offline
- Natural reinforcers are not reinforcing
- Capacity to experience joy is severely limited

How are you feeling?



Happy



Joyful



Content



Silly



Sad



Angry



Scared



Worried



Confused



Surprised

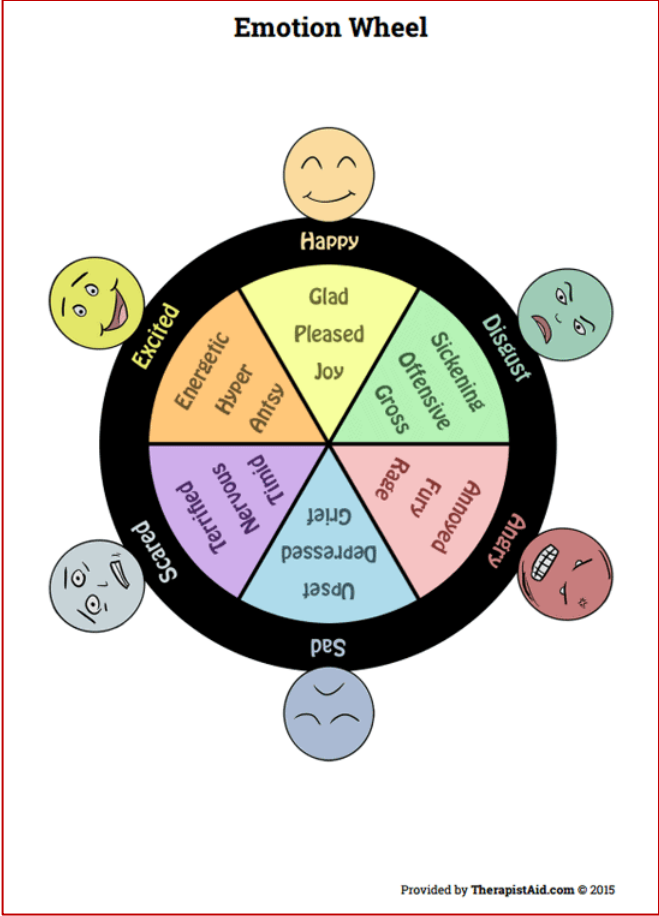


Hurt



Embarrassed

# How are you feeling Today?



# What do I do with my patient?

Provide psychoeducation about return to use

- Discuss anhedonia and why people do not feel good about much of anything
- Discuss executive functions

Integrate movement and stretching into sessions and homework

How are you feeling?



Happy



Joyful



Content



Silly



Sad



Angry



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Worried



Confused



Surprised



Hurt



Embarrassed





# Recovery - Brain Needs to Relearn

## Focus on Behavior



## Anchoring Feelings to Behaviors

- Use behavior to define emotions
- Use a physical sensation to identify feeling happy
- Define what is their definition of "Happy"
- Again the drugs made them feel close to normal and not withdrawal so forgot what "Happy" emotion felt like...





# Move It!

Motor Movement Improves Recall



Feelings can come back



# Physical

Progressive Muscle relaxation

Behavior Activation

4-Square Breathing

Breathing – slow breathing, slow heart rate

Diaphragmatic breathing

In through nose out through mouth

Inhale for three count, hold for three, exhale for three

Rule of 3



# Cognitive



## Thought Stoppers

Identifying Intrusive Thoughts  
Stop Sign



## Guided imagery/visualizations

Assess capacity to visualize  
Identify colors/shapes associated with  
relaxation



## Meditation

Auditory focus  
Visual Focus  
Guided Meditation  
Mindfulness



# Sensory

## Aroma Therapy – Lavender

- Cardiac Pts – 2 % via inhalation improved sleep reduced anxiety
- Chemo Pts – reduced anxiety
- Reduced pre-operative anxiety
- Hemodialysis – subjective quality of sleep improved, reduced anxiety

## Music

- Current findings indicate that music around 60 beats per minute can cause the brain to synchronize with the beat causing alpha brainwaves (frequencies from 8 - 14 hertz or cycles per second). This alpha brainwave is what is present when we are relaxed and conscious. To induce sleep (a delta brainwave of 5 hertz), a person may need to devote at least 45 minutes, in a relaxed position, listening to calming music.

## Have patient identify specific pieces of music that are calming for them

- Recent neuroimaging studies on music and emotion showed that music may strongly influence the *amygdala*

Can utilize smart phones for instant access to music



# Using Senses to Reprogram the Brain

## Reprogramming your brain

Hearing

Trigger song vs. new song

Smells

alcohol vs. lemon smell

Tactile

Roll cig in hand vs. rolling a sucker



# Red Flag Thinking AKA Survival Mode

- Absolutistic
- Black and white
- Discounting the positive
- Jumping to conclusions
- Mindreading
- Fortune telling
- Self blame

4/24/2019





# Implications for Treatment

## Extension of Anhedonia and Executive Function Deficits

- Continuing lack of effect for natural reinforcers
- Re-occurring memory deficits
- Re-occurring deficits in understanding cause and effect

## Return to use over time as a sequential series of withdrawal

- Shorter intervals between use as a re-occurrence of acute withdrawal symptoms
- Longer intervals between use as an extension of protracted withdrawal symptoms

Natural reinforcers, games, sex, music, social interactions not effective and take a long time to come back

Short term memory takes a long time to come back

Ability to plan and recognize likely consequences to actions takes a long time to come back

Impulse control takes a very, very long time to come back

# What is it that we often see?

**Non-compliant patient**

Doesn't know how  
she's going to pay rent

Doesn't feel safe in her  
relationship

Doesn't get paid time off from work  
to attend doctor's appointments

Doesn't own a vehicle

Food insecurity

Adverse childhood  
experiences

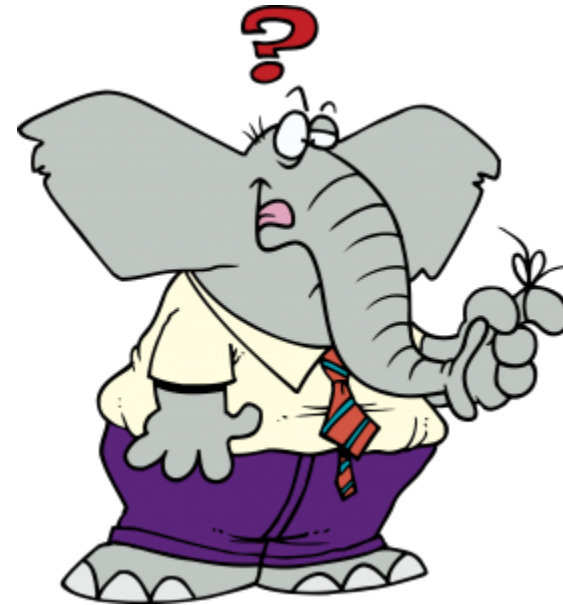
**What's really going on**



# Reminder on this important point

## Hypo-frontality

- Short term memory is problematic
- Impulse control is severely impaired
- Recognition of cause and effect is impaired
- Ability to understand concepts is impaired



# Harm Reduction

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# Harm Reduction—not a new concept in health care



# Harm Reduction

Term developed during the AIDS epidemic.

Principle of harm reduction applies to the treatment of all chronic diseases (think about the management of diabetes).

Safe injection practices, naloxone rescue kits, syringe and needle exchange, overdose prevention sites, all address health care maintenance.

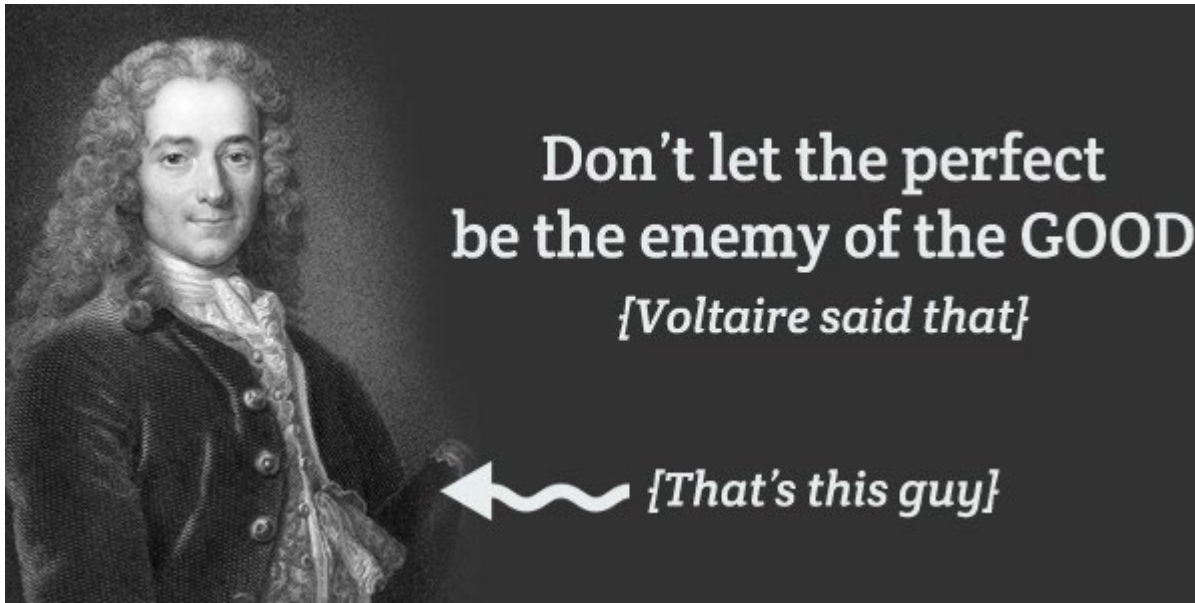
Seat belts, bicycle helmets, etc.

Keep person engaged even if not ready for MOUD or other forms of treatment; use peer support, care coordination.





# Harm Reduction



The goal of harm reduction is **making people's lives better**, regardless of their choice to take or not take substances.

Harm reduction is “**radical empathy**”. The basic idea is that regardless of whether people continue to use illegal drugs or engage in other problematic behaviors, **their lives have value**.

**Low threshold care is a key element!**



# Harm Reduction

- Approach is person-centered, meet people where they are.
- Reduce harms of SUDs to individuals and communities
- Improved health and functioning of the individual is primary goal or outcome
- Harm reduction interventions should be integrated into the continuum of SUD prevention and treatment, which occurs in many venues



# TREATMENT GOALS

Variable based on degree of ambivalence

Stage of change not the same for each identified problem

A harm reduction approach will apply to some problems and a comprehensive therapeutic approach to others

Engagement long term develops trust and an opportunity to facilitate change e.g., resolve ambivalence and facilitate determination



# Treatment Goals Continuum

MINIMIZATION OF HARMS  
FROM ONGOING USE

## ACCEPTS:

Less engagement  
Less compliance  
Less adherence  
Use of other substances

SUSTAINED RECOVERY WITH ABSTINENCE  
FROM ALL SUBSTANCES

More engagement  
Broad social supports  
Compliant/committed/motivated  
Growth and stability across all domains  
\*Lapses are results of mistakes, not failures  
\*Lapses create learning opportunities  
\*Lapses create enhanced recovery



# Reasons We Get it Wrong

Thinking of SUDs differently from other diseases

- Conception of SUDs as moral failings

Unconscious bias

- Implicit associations (IAT tests - <https://implicit.harvard.edu/implicit/>)

Lack of empathy

- Inability to understand the life of PWOD

Expecting perfect outcomes

Applying faulty behavioral theory

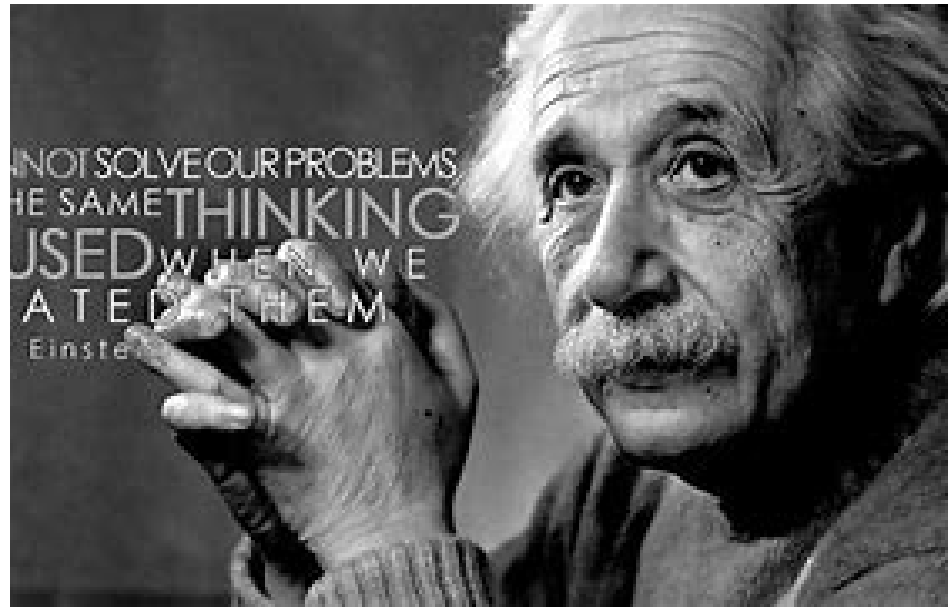
- “Punishment” for bad behavior - War on drugs – “Just say no”

Interpreting the literature

- Being aware of the literature – not applying the science to policies

Not using the appropriate treatment goals







# Summary of Recommendations for Retention and Harm Reduction

1. Cultivate patient trust by creating a welcoming, nonjudgmental, and trauma-sensitive environment.
2. Do not require abstinence as a condition of treatment initiation or retention.
3. Implement clinical strategies to optimize patient engagement and retention.
4. Only administratively discharge patients from treatment as a last resort.
5. Seek to re-engage individuals who disengage from care.
6. Build connections to people with SUD who are not currently seeking treatment.
7. Cultivate staff buy-in.
8. Prioritize retention of front-line staff
9. Align program policies and procedures with the commitment to improve engagement and retention of all patients, including non-abstinent patients.
10. Measure progress and strive for continuous improvement of engagement and retention.



# !! BREAKOUT !!

## What can you and your team tolerate???

Think about the care provided other chronic diseases, like diabetes and the continuum of harm minimization to comprehensive care management

What happens in AA? **“Keep coming back”**--regardless of abstinence—harm reduction through continued engagement

What constitutes abandonment especially when relapse can be **LETHAL**?

UDTs: are positive results deal breakers? Therapeutic opportunity or punitive action?

**Functional status**, is always the benchmark for potential intervention, especially with co-occurring patients

