



NEURO  
INSTITUTE

Continuing Education for Rehabilitation Professionals



# Brain Injury & Substance Use Disorder

Feinberg Addiction Services

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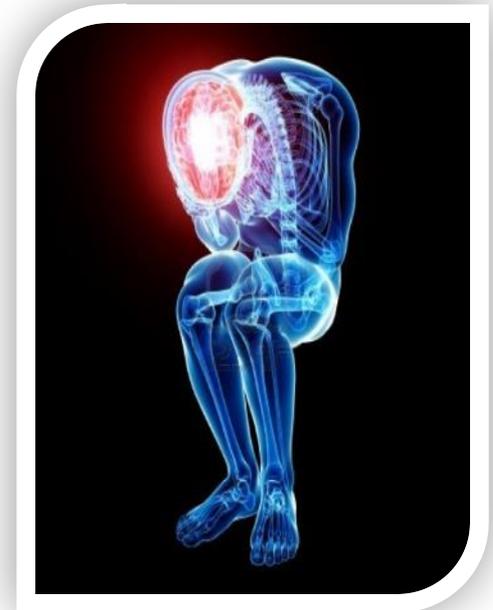
## Objectives

- Brain injury and substance use disorder facts
- Substance types, to include medical marijuana
- Learn about addiction as a disease
- Discuss relapse prevention model for long-term recovery
- Specialized approaches for substance use disorder & brain injury
- Steps for stabilization of addiction
- Long-term addiction recovery transitional model of care
- Recovery resources

## The Facts on Brain Injury

### Key Figures:

- 1.7 million brain injuries occur each year in the U.S.
  - **You may be treating someone who's suffered a brain injury and *not* know it!**
- Direct medical costs and indirect costs resulted in a loss of 76.5 billion in the U.S. in 2000.
- Traumatic Brain Injury is called the “signature wound” for 62% of the wounded soldiers returning from war.
- Approximately 300,000 people incur brain injuries during sporting events – likely more, since most injuries go unreported.



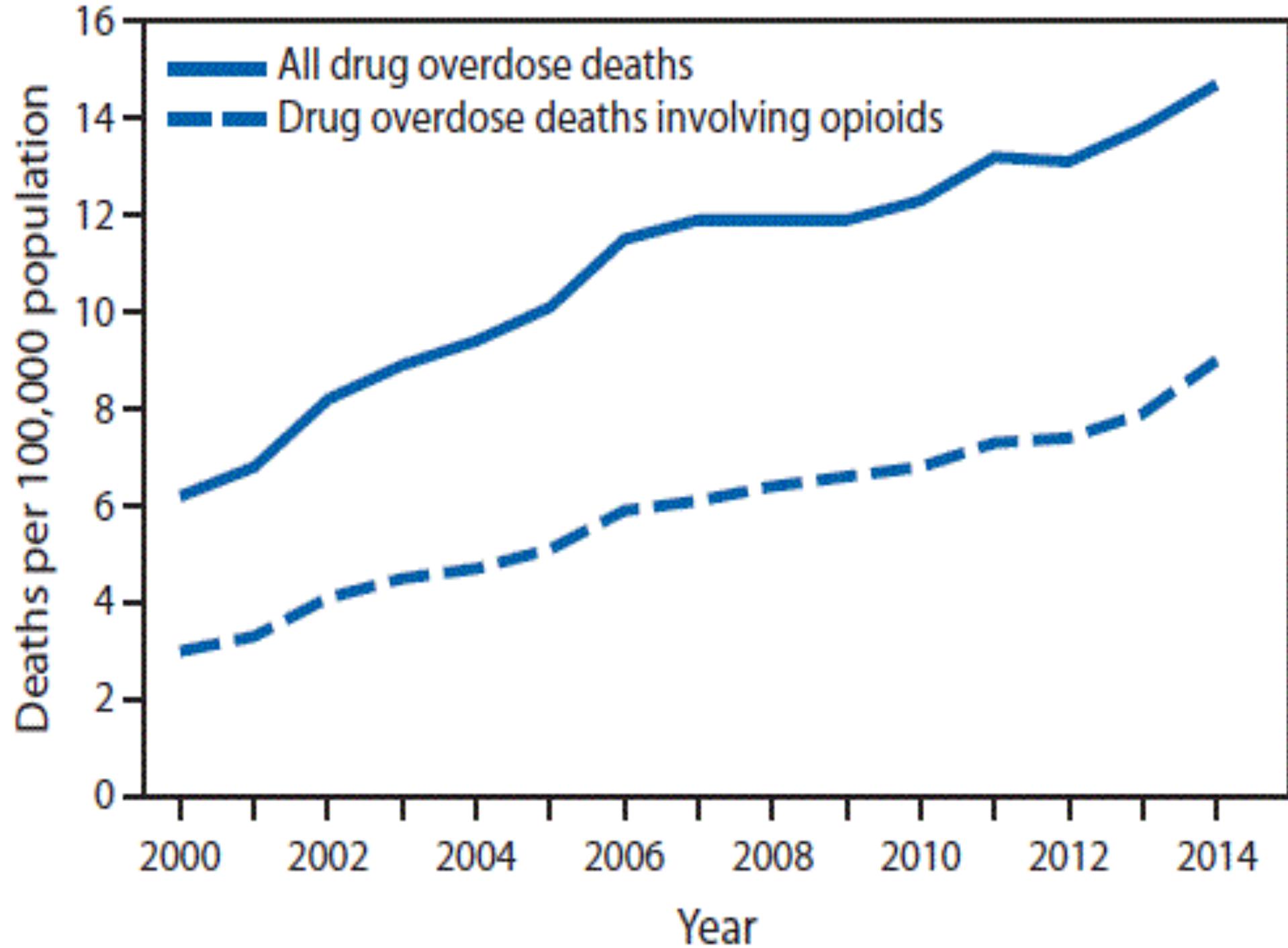
## Brain Injury & Substance Use Disorder

- 10% of patients may use an illicit drug the first year after their injury.
- 25% likely have alcohol use disorder.
- 11% likely have drug use disorder.
- Those with a history of use issues are likely to return to those levels within 2 years of injury.
- The CDC estimates 5.3 million Americans currently have a long-term or lifelong need for help as a result of a brain injury.

## Overdoses

- 80% of the world's supply of opioids is consumed in the US, which has 5% of the world's population.
- 200% increase of overdose deaths since 2000
- ½ million people have died from an overdose from 2000-2014.
- Overdoses can lead to a noxious brain injury.
- These noxious brain injuries can easily go unnoticed.







## A Close Relationship

- Alcohol abuse/dependence is associated with increased risk of sustaining a brain injury.
- 45% of individuals hospitalized for brain injury are legally intoxicated.
- Alcohol intoxication at the time of a brain injury is associated with greater brain injury severity.



## Facts

- Intoxication at the time of injury may mask a brain injury due to similar symptoms (e.g., unsteady gate, confusion, etc.).
- Individuals with a history of substance use disorder/dependence experience brain changes (e.g., cortical atrophy), which can be compounded by a brain injury.
- Persons with no history of pre-injury substance use disorder are 8x as likely to be employed following a brain injury.

*Missouri Department of  
Health Psychology*

## Additional Facts

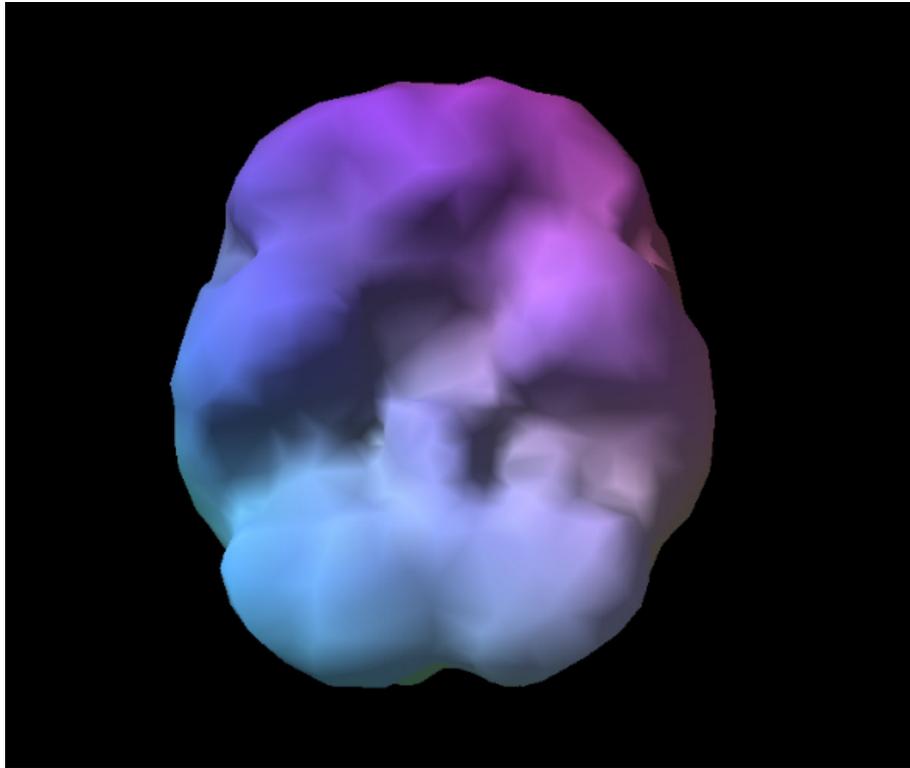
- According to the BIA of America, “There is no safe amount to drink” for someone with a brain injury.
- Seizures are a problem for about 5% of people who have a brain injury. Anti-seizure medications can be prescribed and are dangerous when mixed with alcohol.
- There are specific treatment approaches for people with a brain injury and a substance use disorder.

## Marijuana

- Since the 1970's, The Drug Enforcement Administration has classified marijuana as a Schedule 1 drug (the highest ranking), with no medicinal use and a high potential for abuse.
- It is the most used illegal drug in the United States. In 2012 it was estimated that over 111 million Americans above 12 years old had used the drug at least once.

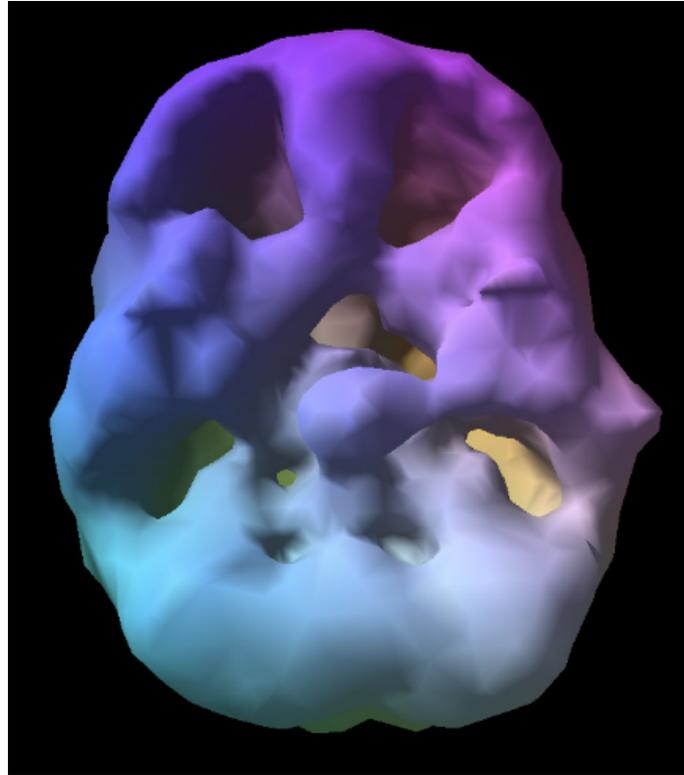


## SPECT Brain Scans



Non-drug abusing brain

## SPECT Brain Scans



**Brain of an 18 yr. old who has been smoking marijuana 4 times a week for 3 years**

# Medical Marijuana



*\*Pennsylvania not classified as a legal medical marijuana state on map  
[norml.org/laws](http://norml.org/laws)*

- There are currently 24 states that passed laws to legalize medical marijuana.
- Pennsylvania became the 24<sup>th</sup> state on April 17<sup>th</sup>, 2016.

## Medical Marijuana

### Michigan Medical Marijuana Law (2008) Qualifying Conditions:

- Alzheimer's Disease
- Amyotrophic Lateral Sclerosis
- Cachexia
- Cancer
- Chronic Pain
- Crohn's Disease
- Severe Muscle Spasms
- Glaucoma
- HIV/AIDS
- Hepatitis C
- Nail Patella
- Nausea
- Post-Traumatic Stress Disorder
- Seizures

## Marijuana Side Effects

### Short-term:

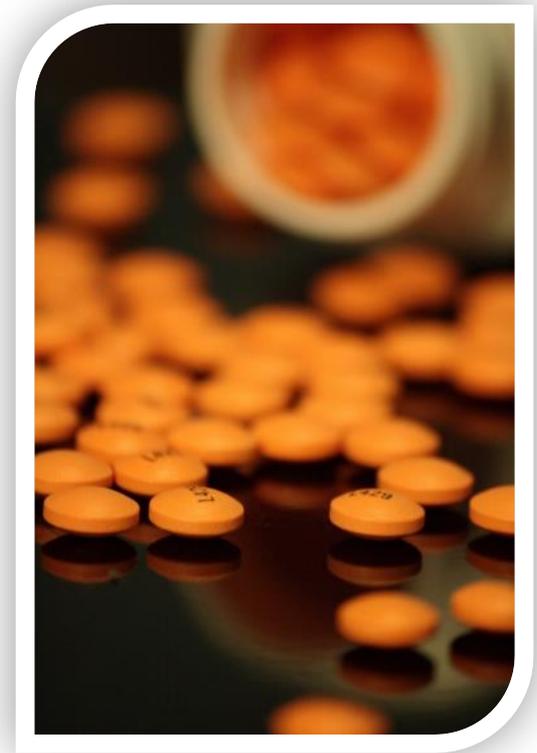
- Respiratory irritation, heavy coughing
- Sedation, dizziness
- Anxiety
- Hypotension
- Cognitive effects
- Changes in mood
- Impaired memory
- Impaired body movement
- Difficulty with problem-solving
- Safety concerns

### Long-term:

- Marijuana use during development can cause long-term or permanent adverse changes in the brain.
- Impairment in cognitive abilities, the degree/duration of the impairment depends on the age of the user, and the frequency and duration they have been using.

## Other Substances

- **Alcohol**
- **Opioids**
  - Opiates: Opium, Morphine, Codeine
  - Semi-Synthetic: Heroin, Hydrocodone, Oxycodone, Buprenorphine
  - Synthetic: Fentanyl, Methadone, Tramadol
- **Benzodiazepines**
  - Lorazepam (Ativan), Clonazepam (Klonopin), Diazepam (Valium), Oxazepam (Serax), Alprazolam (Xanax)



## Other Substances

- **Stimulants**
  - Cocaine, Crack, Ecstasy/MDMA, Amphetamines, Methamphetamines
- **Hallucinogens**
  - Psychedelics: Marijuana, LSD, Acid, Peyote, Mescaline
  - Dissociatives: Mushrooms, PCP, Katamine, Dextromethorphan (DXM), Salvia, Ketamine (Special K)
  - Deliriant: Atropine, Datura, Deadly Nightshade
- **Synthetic Cannabinoids**
  - Spice, K2, Joker, Black Mamba, Kush, Kronic
- **Other Drug Trends**
  - Flakka/Gravel, Kratom, Molly, Purple Drank/Syrup, Bath Salts

## Key Points For Substance Abuse Disorder

- Substance use disorders are brain disorders, not a lack of willpower or evidence of moral weakness.
- Patients are to be treated with respect, dignity, and in a non-judgmental and supportive manner.
- Substance use disorders are treatable, there is hope for recovery.



## Beginning Phase - Identification

### Assessment

- Case Manager who is educated and certified in substance use disorder conducts a thorough assessment, including substance use disorder, mental health, physical health, concerns related to relationships, legal issues, life skills, and finances.

### Intervention

- Skilled Interventionists work with individuals and their families in a loving way, developing and implementing a customized plan for treatment. This can include treatment center placement and financial planning for recovery.

## Recovery Is About More Than Detoxing...

“Detoxification services do not offer a “cure” for substance use disorders; they are often a first step toward recovery and a “first door” through which patients pass to treatment.”

([Samhsa.gov](http://Samhsa.gov))

## Medical Detoxification

### Substances requiring medical detoxification with medication management:

- **Alcohol:** May result in seizures and death without medical detoxification.
- **Benzodiazepines:** May result in seizures and death without medical detoxification.
- **Opiates:** Medical detoxification to reduce symptoms of abdominal cramps, nausea, vomiting, diarrhea, bone and muscle pain, and anxiety that may stop a person from the ability to detoxification without medical intervention.

## Addiction Treatment

**Medical Detox** – 3-5 days of medication assistance detoxing from all substances safely

**Residential Treatment** – minimum of 30 days

**Partial Hospitalization Program (PHP)** – Day treatment

**Intensive Outpatient Program (IOP)** – 3- 4 days per week for 3 hours of group therapy

**Outpatient Therapy** – Individual therapy with a trained substance abuse counselor

## Addiction Treatment Phases



**Medical Detox:** Substances that require medical detoxification; alcohol, opiates, benzodiazepines

**Residential Rehabilitation:** (After detox or when medical detox not needed then admission directly). Provides a 30-90 day treatment program for individual and group therapies to address the underlying issues for the addiction.

## Addiction Treatment Phases

**Transitional Living:** (Transitional,  $\frac{1}{2}$  sober living,  $\frac{3}{4}$  sober living). Longer term sober living environment to continue with skill building (life, relapse prevention and recovery skills) while groups and individual therapies are provided outpatient. Going to outside AA, NA, Smart Recovery or other groups for support and working with a recovery coach and sponsor for long-term recovery.

**Community Living:** Apartment or home environment with continued outpatient individual and group counseling along with AA, NA, Smart Recovery Groups for long-term recovery. Also continue with recovery coach as needed and AA or NA Sponsor.

## Motivational Interviewing

- A promising approach to facilitating positive change for people with dual-diagnosis (though like most approaches, it needs to be adapted to the individual).

## Cognitive-Behavioral Therapy

- Whether or not someone has a brain injury, Cognitive-Behavioral Therapy needs to be adapted to a person's capability for understanding the connections between beliefs and feelings.



## Behavioral Analysis (Scientific study of behavior)

Analysis of the environmental effects on person with and implementation of skills to reduce incidents and/or element other incidents over time.

- What happens before behavior.
- Behavior – understand the responses, skills and repertoire.
- Consequences – what happens after the behavior.



### **Dialectical behavior therapy (DBT)**

- A therapy designed to help people change patterns of behavior that are not helpful.
- This approach works towards helping people increase their emotional and cognitive regulation by learning about the triggers that lead to reactive states and helping to assess which coping skills to apply in the sequence of events, thoughts, feelings, and behaviors to help avoid undesired reactions.
- DBT assumes that people are doing the best they can but are either lacking the skills or influenced by positive or negative reinforcement that interfere with their ability to function appropriately.
- Recent work with DBT shows its effectiveness with sexual abuse survivors and chemical dependency.<sup>1</sup>

## Addiction Recovery Services

### **Case Management**

- A Case Manager coordinates the intervention, admission to detox and residential treatment. The Case Manager then monitors the recovery process to ensure the necessary transitions occur and supportive services are in place.

### **Recovery Coaching**

- Recovery Coaching provides support and direction for those in recovery through life skills development, relapse prevention, and mentorship. Recovery coaches develop a powerful connection with clients, which creates lasting recovery and a life of purpose.

## Addiction Recovery Services

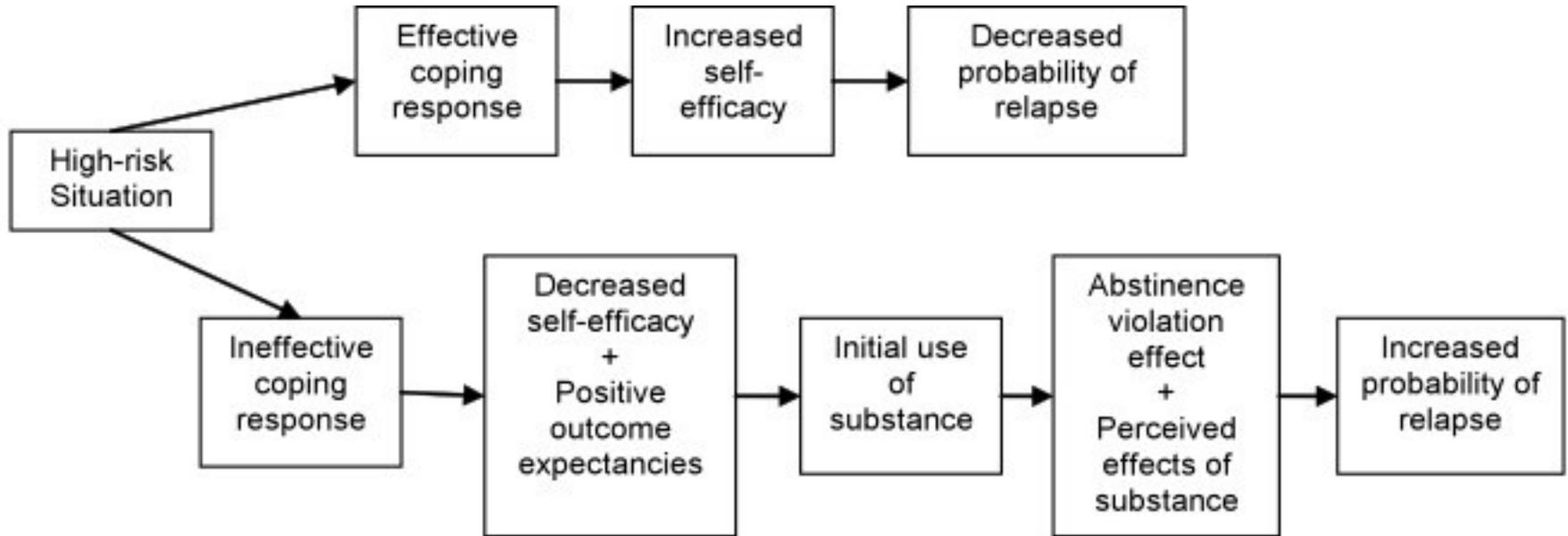
### **Family Recovery Coaching**

- A Family Recovery Coach works with families on the disease of addiction and guiding them through the recovery process. The entire family experiences healing through a framework of supportive professionals.

### **Career Coaching**

- From obtaining a job, through developing and furthering a career, Vocational experts help individuals find challenging and rewarding work.

# Relapse Prevention Model



Original cognitive-behavioral model of relapse (Marlatt & Gordon, 1985)

## Addiction Recovery Support Groups

**Narcotics Anonymous:** Offers recovery from the effects of addiction through working a twelve-step program, including regular attendance at group meetings.

**Alcoholics Anonymous:** An international fellowship of men and women who have had a drinking problem. It is nonprofessional, self-supporting, multiracial, apolitical, and available almost everywhere.

**Al-Anon:** A mutual support group of peers who share their experience in applying the Al-Anon principles to problems related to the effects of a problem drinker in their lives.

**SMART Recovery:** A self-empowering addiction recovery support group. Participants learn tools for addiction recovery based on the latest scientific research and participate in a world-wide community which includes free, self-empowering, science-based mutual help groups.

**Refuge Recovery:** Is a mindfulness-based addiction recovery community that practices and utilizes Buddhist philosophy as the foundation of the recovery process. Drawing inspiration from the core teachings of the Four Noble Truths, emphasis is placed on both knowledge and empathy as a means for overcoming addiction and its causes. Those struggling with any form of addiction greatly benefit when they are able to understand the suffering that addiction has created while developing compassion for the pain they have experienced. We hope to serve you, and meet you on the path.

## Summary

- Brain injuries and substance use disorders are deeply intertwined. Being aware of these two conditions appearing simultaneously can be key to understanding your patient's needs and maximizing their chances for improvement.
- By recognizing the symptoms of a substance use disorder, you are making a vital discovery, one which can alter your perception of a patient and the path they need for recovery.
- Remember that substance use disorder can leave invisible wounds that can affect millions of people. Some families may not even be aware of their own history of addiction.

Questions?



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