ADDICTION AND THE BRAIN

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INOVA CATS

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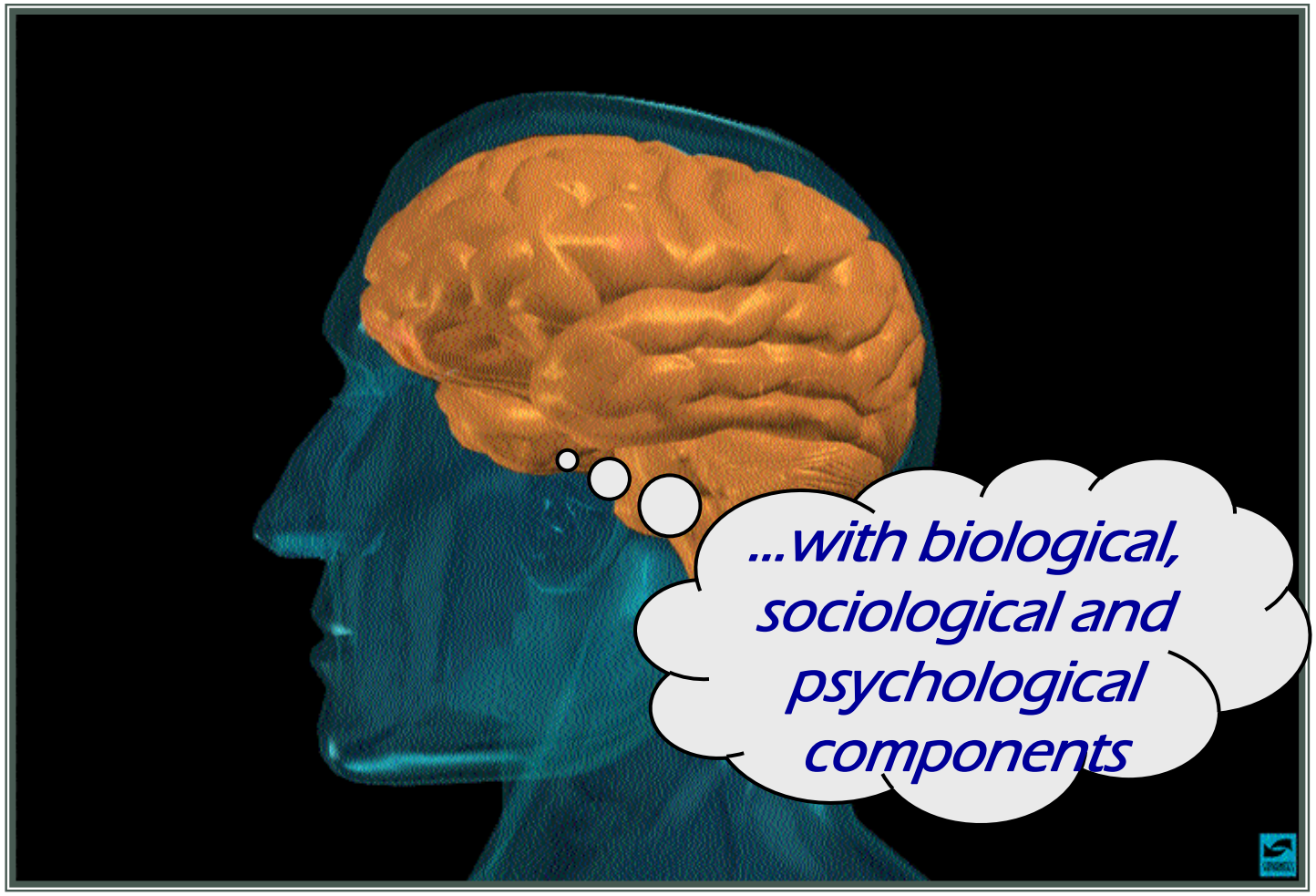

How does the brain become addicted?

Drug use of any type activates the same circuits as do behaviors linked to survival and pleasure

- Eating
- Bonding
- Sex

The drug causes a surge in levels of a brain chemical called dopamine, which result in increased feelings of pleasure. The brain remembers this pleasure and wants it repeated.

Why do people take drugs in the first place?

To feel good

To have novel:

- feelings
- sensations
- experiences

AND

To feel better

To lessen:

- anxiety
- worries
- fear
- depression
- hopelessness

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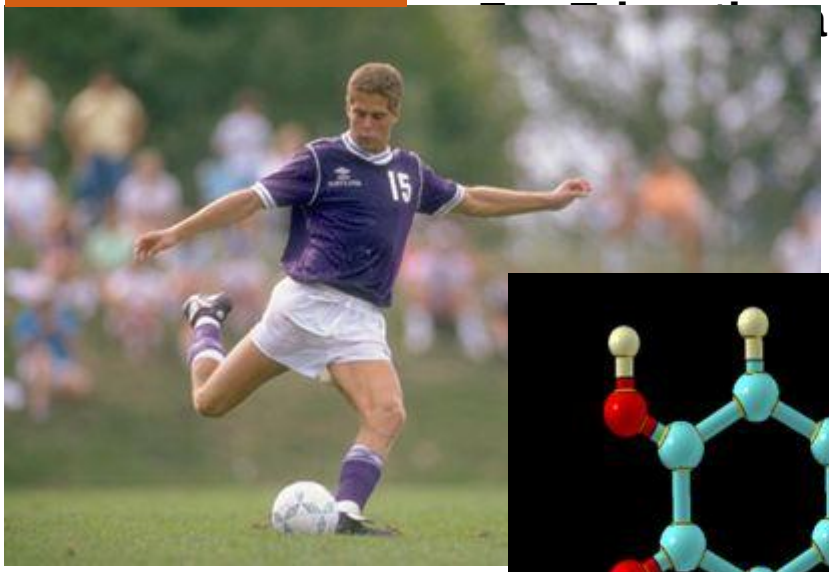
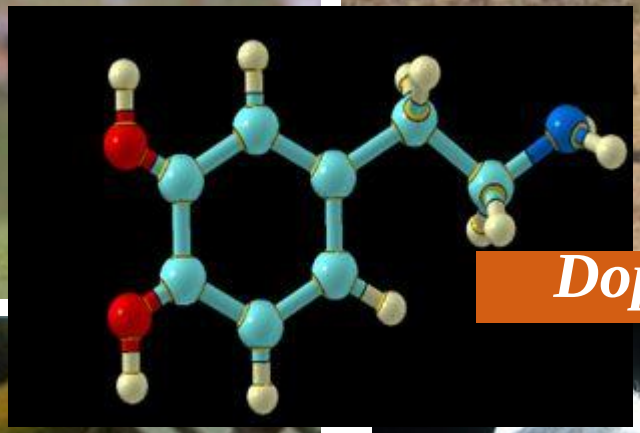
Movement



Motivation



Dopamine

Addiction

Reward & Well-being

Continued drug abuse

This begins as a choice – Brain imaging studies from drug-addicted individuals show physical changes in areas of the brain that are critical to:

- judgment
- decision making
- learning and memory
- behavior control

Scientists believe that these changes alter the way the brain works, and may help explain the compulsive and destructive behaviors of addiction.

Measuring Pleasure

Drugs boost the normal brain levels of the neurotransmitter dopamine, which produces feelings of pleasure and increases energy. Drugs causes an excessive spike in dopamine. Scientists say the excessive release contributes to the drug's destruction of the brain.

Dopamine Index

Cheeseburger	1.5
Sex	2.0
Nicotine	2.0
Cocaine	4.1
Methamphetamine	11.0

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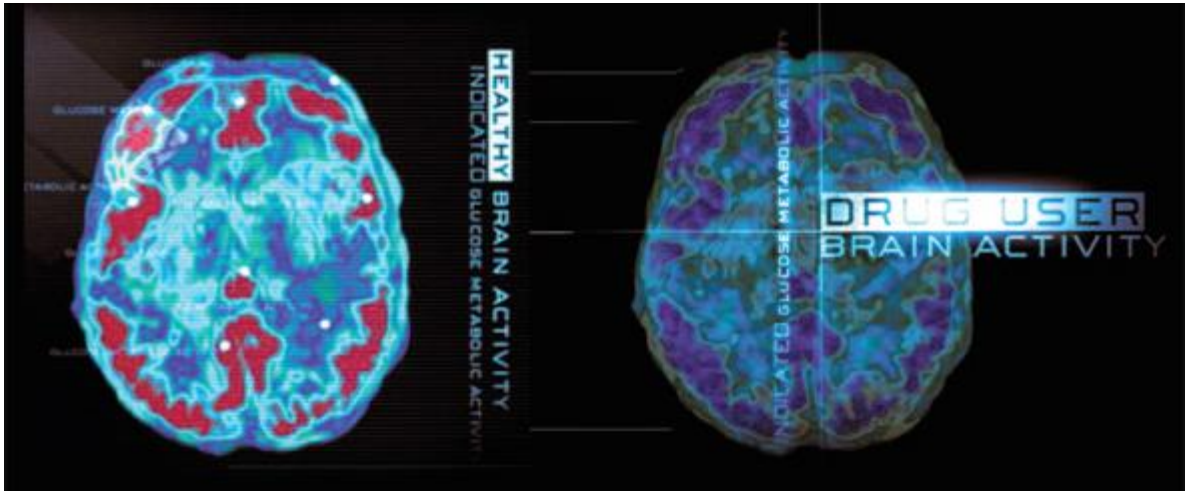
The Cycle of Addiction

What is addiction?

Addiction is a Brain Disease

Characterized by:

- compulsive behavior
- continued abuse of drugs despite negative consequences
- persistent changes in the brain's structure and function



Addiction is like other diseases…

- It is preventable
- It is treatable
- It changes the biology of the body
- If untreated, it can lead to increased risk of Mortality, Morbidity and can severely affect the quality of the life of the patient

Effect of prolonged use - Tolerance

- Take higher doses
- Dose more frequently
- Change their method of drug intake
- “Run” - forego food and sleep while binging
- Strong cravings cause impairment in judgment with increase in impulsivity

Brain Reward Pathways

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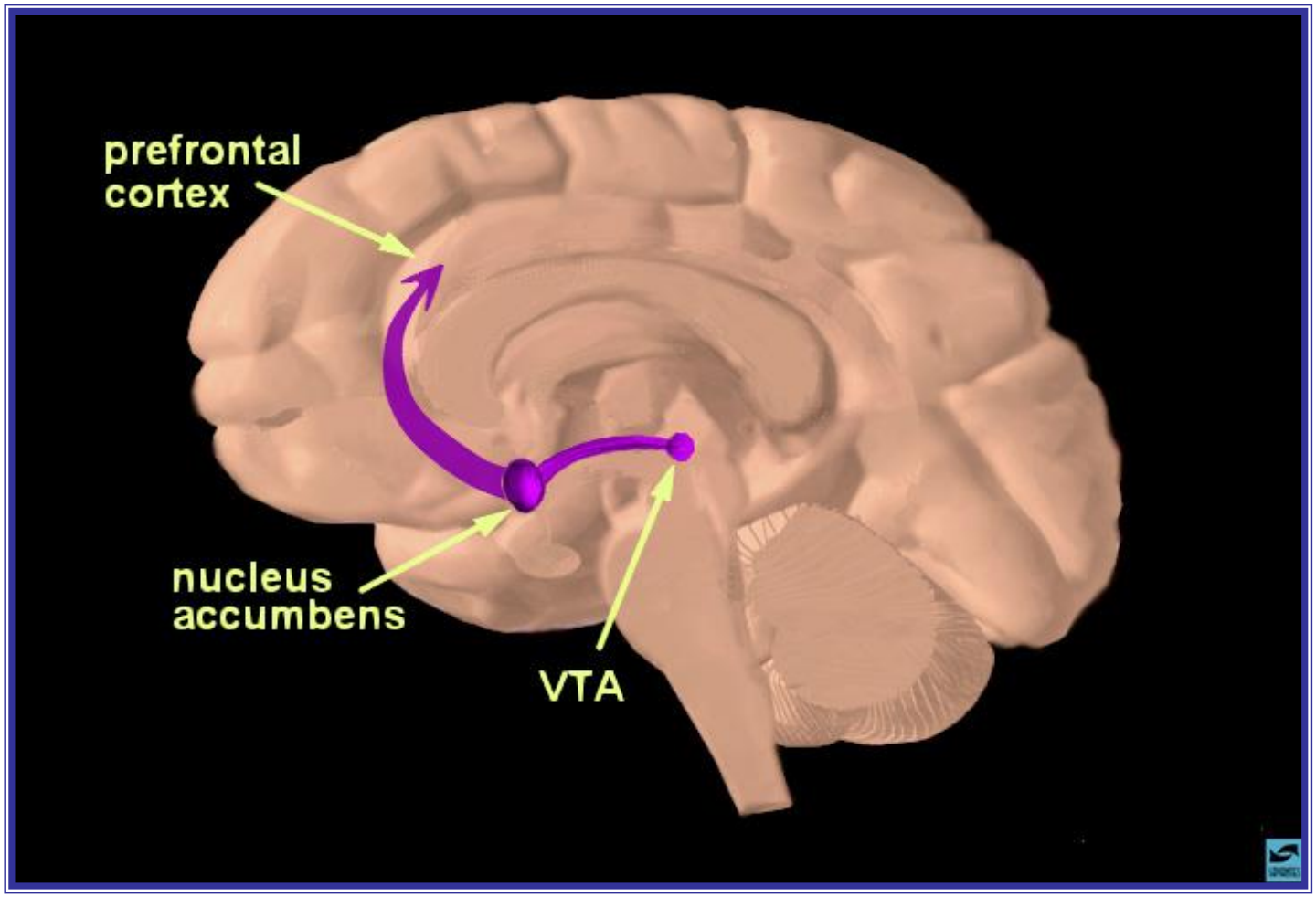


BIOCHEMICAL

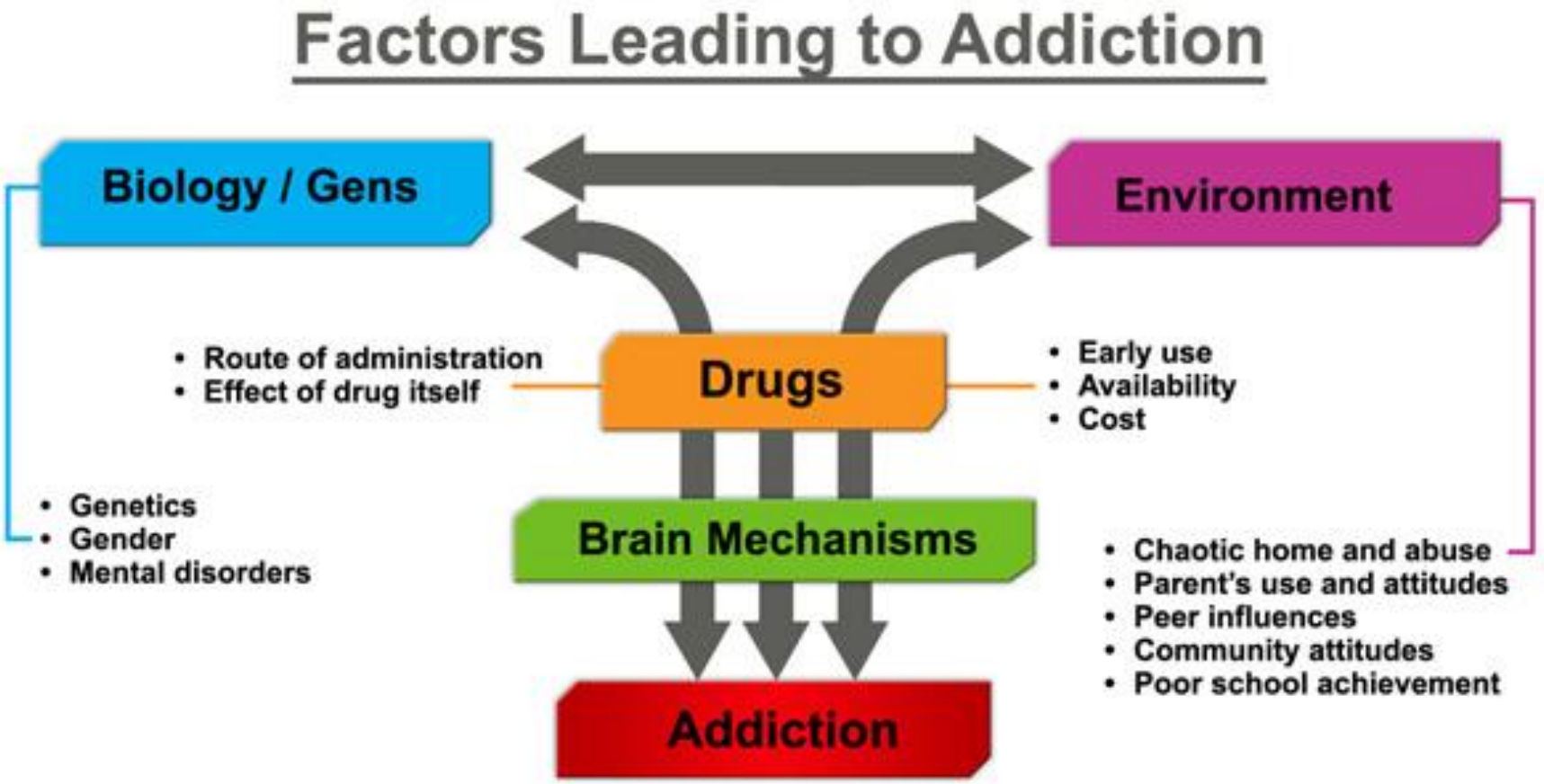
Biologically Alcohol & other Drugs interfere with alter neurotransmitters that allow neurons to communicate with each other, tell our body what to do, how to react, what to experience, etc. These things all happen in the “primitive” brain. (survival section) The four major neurons addressed in addiction abuse are:

1. **DOPAMINE** – responsible for pleasure and reward
2. **SEROTONIN** – responsible for mood, sleep, appetite, perceptions
3. **GABA** – responsible for calming, sedation, anti-anxiety
4. **ENDORPHINS** – responsible for pain
5. **Glutamate-** Excitatory chemical responsible for the withdrawal

Vulnerability

Why do some people get addicted to drugs while others do not?

Risk Factors



Genetics

Genetics is a Big Contributor to the Risk of Addiction

The Nature of this Contribution Is Extremely Complex

What environmental factors contribute to addiction?

- **Stress**
- **Trauma -** Early physical or sexual abuse
- **Trauma -** Witnessing violence
- **Peers who use drugs**
- **Drug availability**

No single factor determines whether a person will become addicted to drugs

- **Genetic factors** account for 40-60% of a person's vulnerability to addiction including the effects of environment on these factors
- **Parents or older family** members who abuse alcohol or drugs, or who engage in criminal behavior, can increase children's risks of developing their own drug problems
- **The earlier a person begins** to use drugs the more likely they are to progress to more serious abuse
- **Method of administration**. Smoking a drug or injecting it into a vein increases its addictive potential
- **Some people will never develop** diabetes because they never go over a certain weight –much like some people will never become drug dependent because they never try drugs. If they did, they would in both cases

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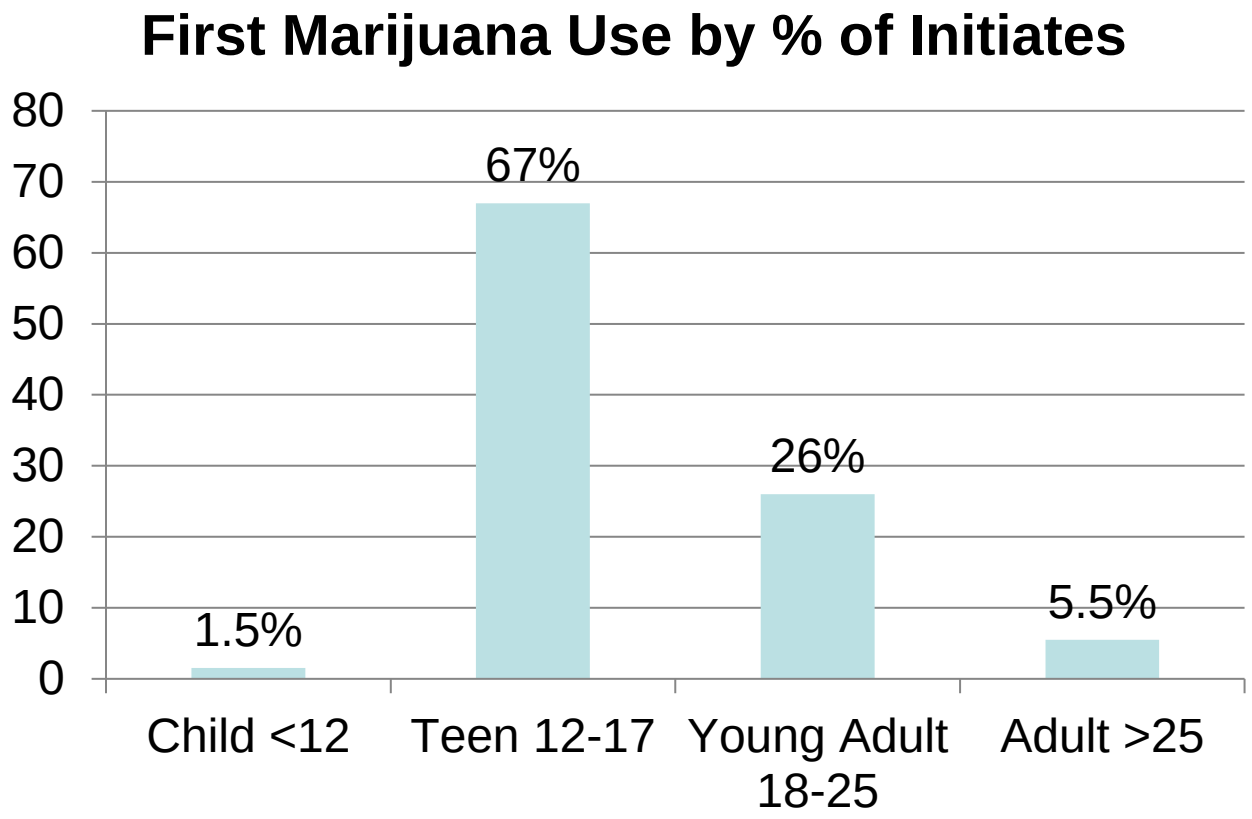
Addiction is a developmental disease: It starts early



Does drug abuse cause mental disorders, or vice versa?

- Drug abuse and mental disorders often co-exist. In some cases, mental diseases may precede addiction; in other cases, drug abuse may trigger or exacerbate mental disorders, particularly in individuals with specific vulnerabilities.
- 50-75% of all clients have some psychiatric disorder

Family Response to Addiction

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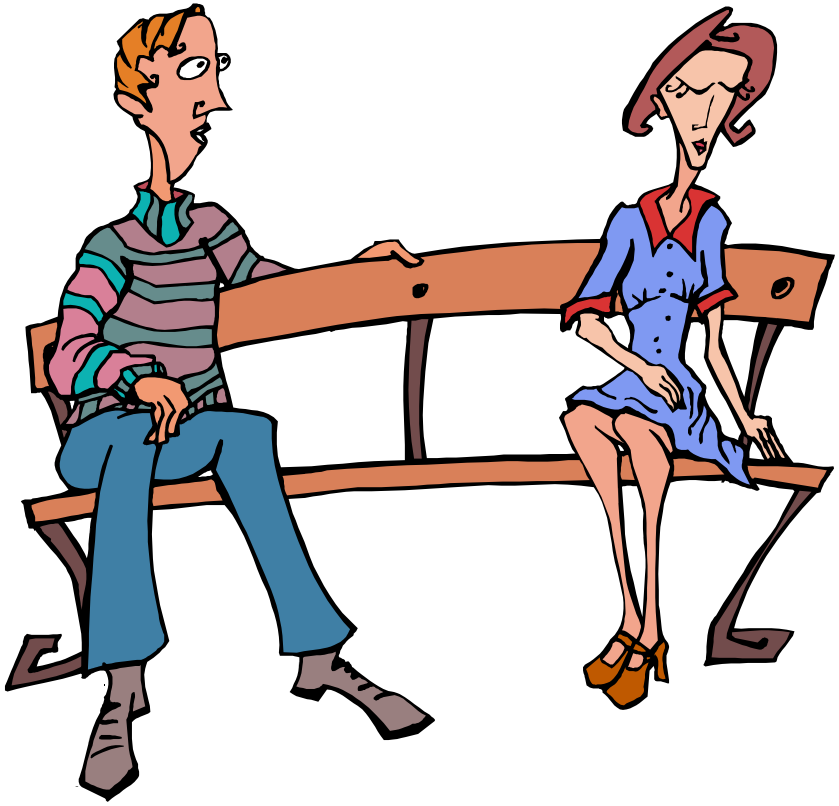
- Behavioral observations
- Recognition
- Disenchantment
- Disaster

Observation Phase **For Educational Use Only**

- Unaware of problem
- Confusion regarding occasional odd behaviors
- Concerned about occasional neglect of responsibilities

Recognition Phase **For Educational Use Only**

- Are aware of the problem
- Attempt to solve the problem
- Take on all responsibilities



Disenchantment Phase

- Avoidance of problem
- Blaming the person who is using
- Blaming selves
- Guilt and shame

Family Members' Response to Drug Use

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- Separation
- Internalization of bad feelings
- Resignation and hopelessness
- Establishment of unhealthful family rules

Benefits of Family Involvement

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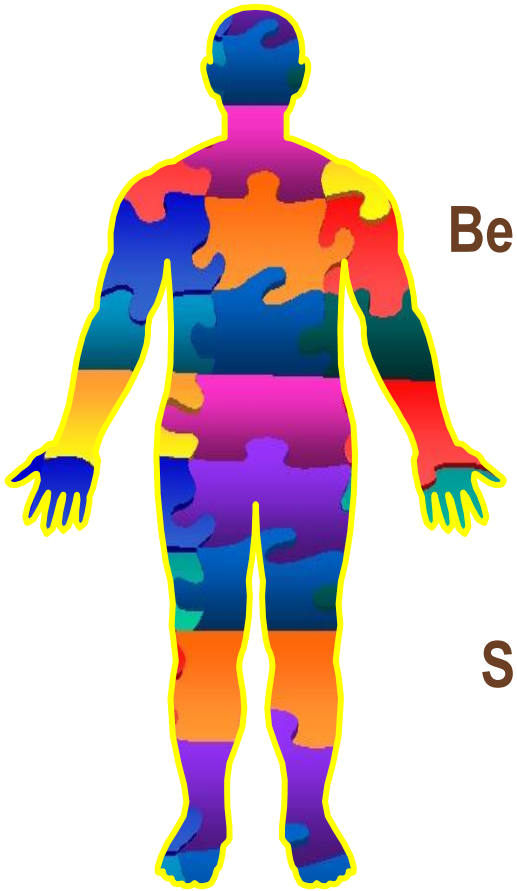
- Participation by family members is associated with better treatment compliance and outcome.
- Family members gain a clearer understanding of recovery.
- Family members and the person in recovery understand their respective roles and goals.
- Family members and the person in recovery get support in the recovery process.

Treating a Biobehavioral Disorder Must Go Beyond Just Fixing the Chemistry

We need to treat the whole person.

Pharmacological Treatments (Medications)



Behavioral Therapies

Medical Services

Social Services

In Social Context

Basic Treatment Considerations

Many substance dependent individuals demonstrate:

1. Low Impulse Control
2. Low Tolerance for Frustration
3. High Likelihood of Psychiatric Complications (paranoia, delusions, agitated depression)
4. High Risk for Explosive, Violent Behavior
5. High Risk of Depression and High Risk of Suicide
6. Very Strong Craving
7. Cognitive and Memory Impairment
8. Brief Attention Span

Biopsychoosocial Treatment

Biological treatment: medical detox, anti craving medications, treatment of Comorbid medical and psychiatric disorders

Psychological treatment: Motivational counseling, CBT, Intensive outpatient treatment Psychoeducation, Family therapy

Social treatment: 12 step programs (AA, NA, Smart recovery, Sober housing, drug courts

Treatment Can Work

- No single treatment is appropriate for all individuals.
- Treatment needs to be readily available.
- Treatment must attend to multiple needs of the individual, not just drug use.
- Multiple courses of treatment may be required for success.
- Remaining in treatment for an adequate period of time is critical for treatment effectiveness.

What Does Work?

Treat them with respect:

- Listen to their concerns and reasons for continued or relapse.
- Meet our clients where they are emotionally and intellectually, not where we are.
- Use drug testing
- Clients must be held accountable and have to face consequences for their actions.

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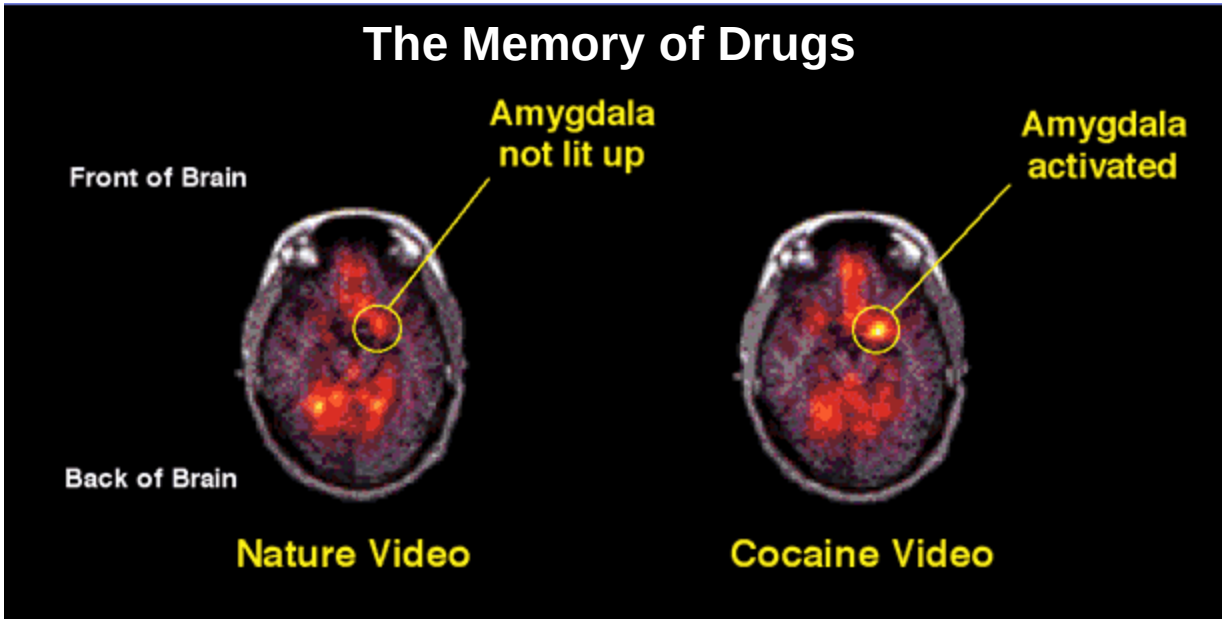
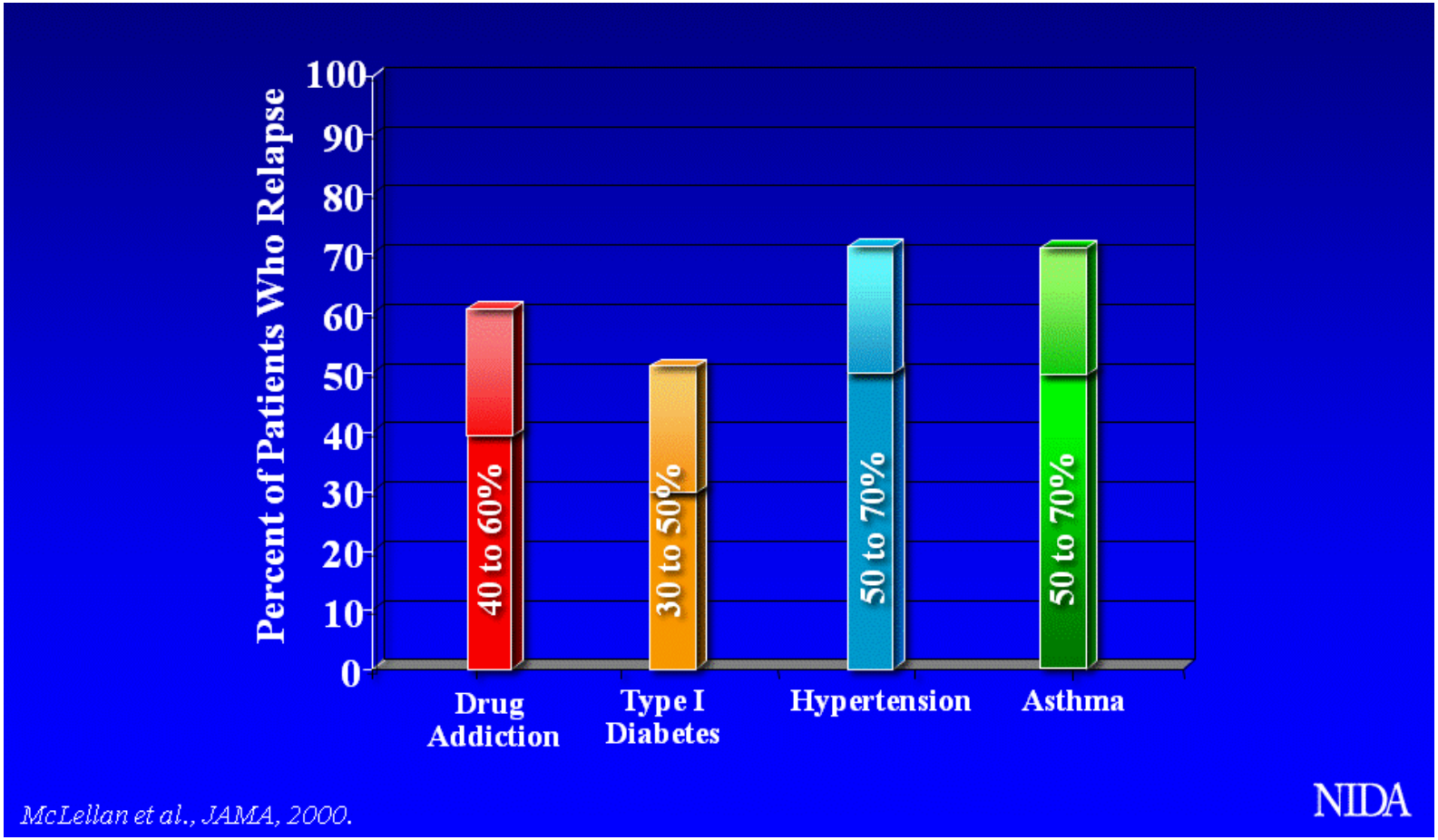
Relapse

- 60% of people who successfully complete treatment will relapse within the first year after leaving a facility.
- The leading cause for relapse is failure to follow the prescribed continuing care plan set up at discharge.



Full recovery is a challenge, but it is possible!

Relapse Rates are Similar for Drug Addiction and other Chronic Illnesses



Chronic Medical Diseases' Similarity To Alcohol/Drug Dependence

Similarities to other chronic diseases:

- Less than 50% take medications as prescribed
- Less than 30% of patients comply with prescribed behavioral change
- Relapse rates of 40% - 60% per year
- Re-emergence of symptoms following discontinuation of treatment

Drug addiction is a chronic illness with relapse rates similar to those of hypertension, diabetes, and asthma.

Relapse—Lessons to Learn

- Demonstrates the recovering person's continued vulnerability
- Could show them that recovery is a life-long process
- Relapse can progress fast with progressive psychological and behavioral changes
- Can start hours, days, weeks or months before a person uses mood-altering chemicals

Remember

i'm not telling you it is going to be easy, i'm telling you it's going to be worth it.

Resources

For More Information

NIDA Public Information:

www.nida.nih.gov

www.drugabuse.gov

NIDA International Program:

www.international.drugabuse.gov