

# Substance Use Disorders: The Basics



**SASKATCHEWAN  
METHADONE AND SUBOXONE  
OPIOID SUBSTITUTION THERAPY  
CONFERENCE**

**SASKATOON  
APRIL 2015**

# Disclosures

2

- **No conflict of interest.**
- **Methadone prescriber since 1998.**
- **Work within the SHR Methadone Assisted Recovery Program.**
- **Chair, College of Physicians and Surgeons of Saskatchewan Opioid Advisory Committee, 2013 -**

# Objectives

3

- **Explore the definition of Addiction.**
- **Learn the DSM 5 framework and diagnostic criteria for a Substance Use Disorder.**
- **Reflect on the risks for the development of a SUD.**
- **Understand the basic neurophysiology of Addiction, and how it challenges treatment and recovery.**

# Addiction Defined

4

**A COMMON TERM,  
COMMONLY MISUSED**

# Addiction Defined: ASAM & CSAM

5

- 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 behaviours.

# Addiction Defined: ASAM & CSAM

6

- Inability to consistently abstain.
- Impaired behavioral control.
- Craving.
- Diminished recognition of problems with one's behavior & relationships.
- Dysfunctional emotional response.

# Addiction Defined: ASAM & CSAM

7

- **Like other Chronic Diseases, there are cycles of relapse and remission.**
- **Without treatment or engagement in recovery activities, addiction is progressive and can result in disability or premature death.**

# Addiction Defined (4 C's)

8

- **IMPAIRED CONTROL** over drug use once ingestion begins. (DSM 5: 1, 2, 3, 8.)
- **COMPULSIVE** use marked by preoccupation or salience, with increasing devotion to acquisition, use, effect, and recovery. (DMS 5: 3, 4, 5, 6, 7, 9.)
- **CONTINUED** and recurrent use **DESPITE NEGATIVE CONSEQUENCES** or harm. (DSM 5: 5, 6, 7, 9.)



# DSM IV Substance Dependency

9

- Abuse
- Dependence (Addiction)
- Intoxication
- Withdrawal
- Substance Induced Psychiatric Disorders

(DSM IV)

# DSM 5 Substance Use Disorder

10

- A problematic pattern of use leading to clinically significant impairment or distress, as manifested by at least 2 of the following, occurring within a 12 month period.
- 4 criterion:
  - 1) Impaired control
  - 2) Social impairment
  - 3) Risky use
  - 4) Pharmacological criteria

# DSM 5 Substance Use Disorder

11

- **Impaired Control:**
- **1) The substance is taken in larger amounts or over a longer period than was intended.**
- **2) There is a persistent desire or unsuccessful efforts to cut down or control use.**
- **3) A great deal of time is spent in activities to obtain, use or recover.**
- **4) Craving, or strong desire to use, exists.**

# DSM 5 Substance Use Disorder

12

- **Social Impairment**
- **5) Recurrent use results in a failure to fulfill major role obligations at work, school or home.**
- **6) Continued use despite having persistent or recurrent social or interpersonal problems cause or exacerbated by the effects of use.**
- **7) Important social, occupational, or recreational activities are given up or reduced because to use.**

# DSM 5 Substance Use Disorder

13

- **Risky Use**
- **8) Recurrent use in situations in which it is physically hazardous.**
- **9) Continued use in spite of knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance.**

# SDM 5 Substance Use Disorder

14

- **Pharmacological Criteria**
- **10) Tolerance: either**
  - **A) A need for markedly increased amounts to achieve intoxication or desired effect or**
  - **B) A markedly diminished effect with continued use of the same amount.**
- **11) Withdrawal: either**
  - **A) A characteristic withdrawal syndrome or**
  - **B) A related substance is taken to relieve or avoid withdrawal.**

# DSM 5 Substance Use Disorder

15

- **A spectrum disorder:**
- **Mild: 2 – 3 symptoms.**
- **Moderate: Presence of 4 – 5 symptoms.**
- **Severe: Presence of 6 or more symptoms.**

# Addiction

16

- **A pathological relationship**
- **with a mood altering activity**
- **with life damaging consequences.**

**(Bradford)**

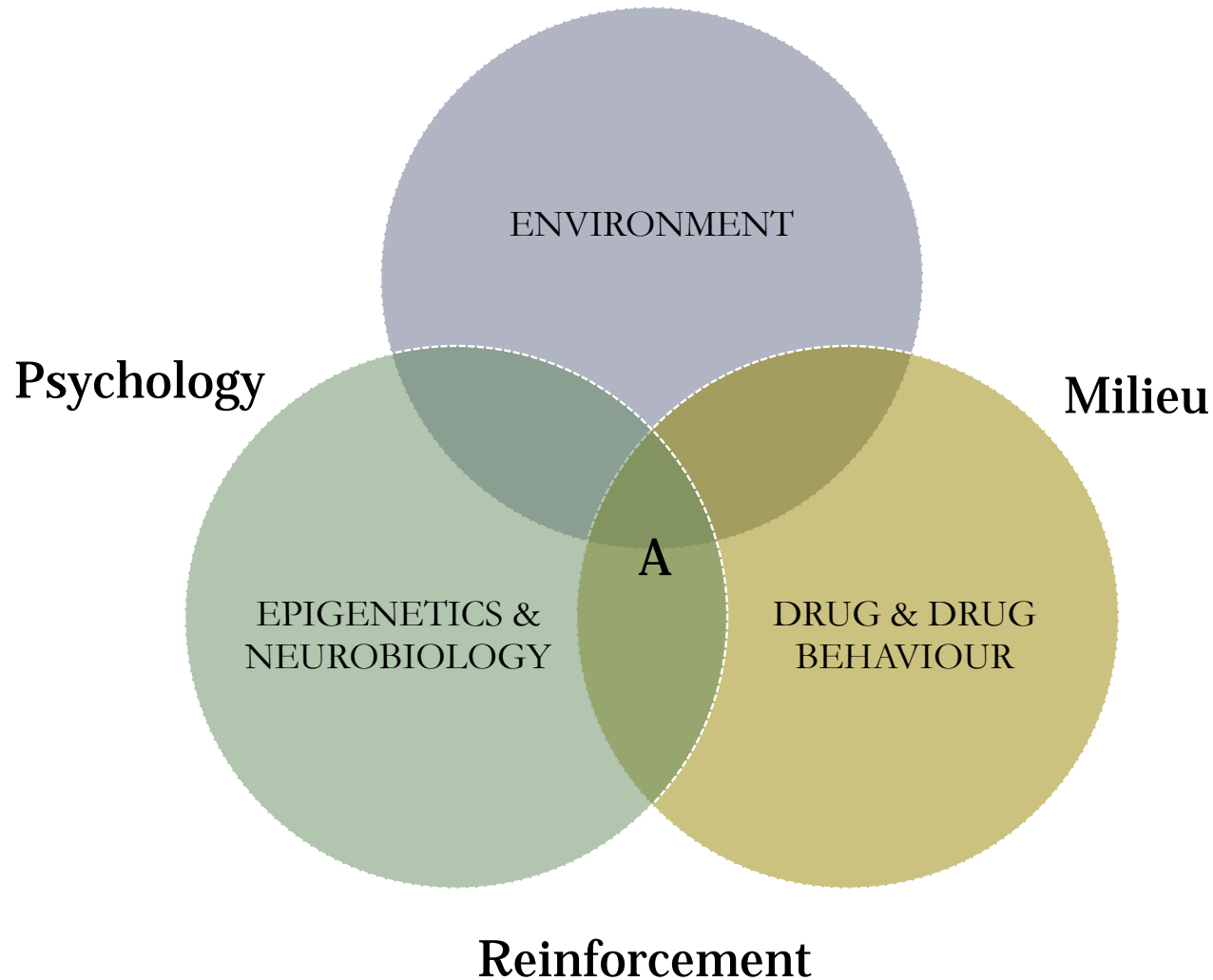


# What Causes Addiction?

17

**THE PRIMARY RISK FACTORS  
OF  
AN EQUAL OPPORTUNITY DISEASE**

# What Places People at Risk?

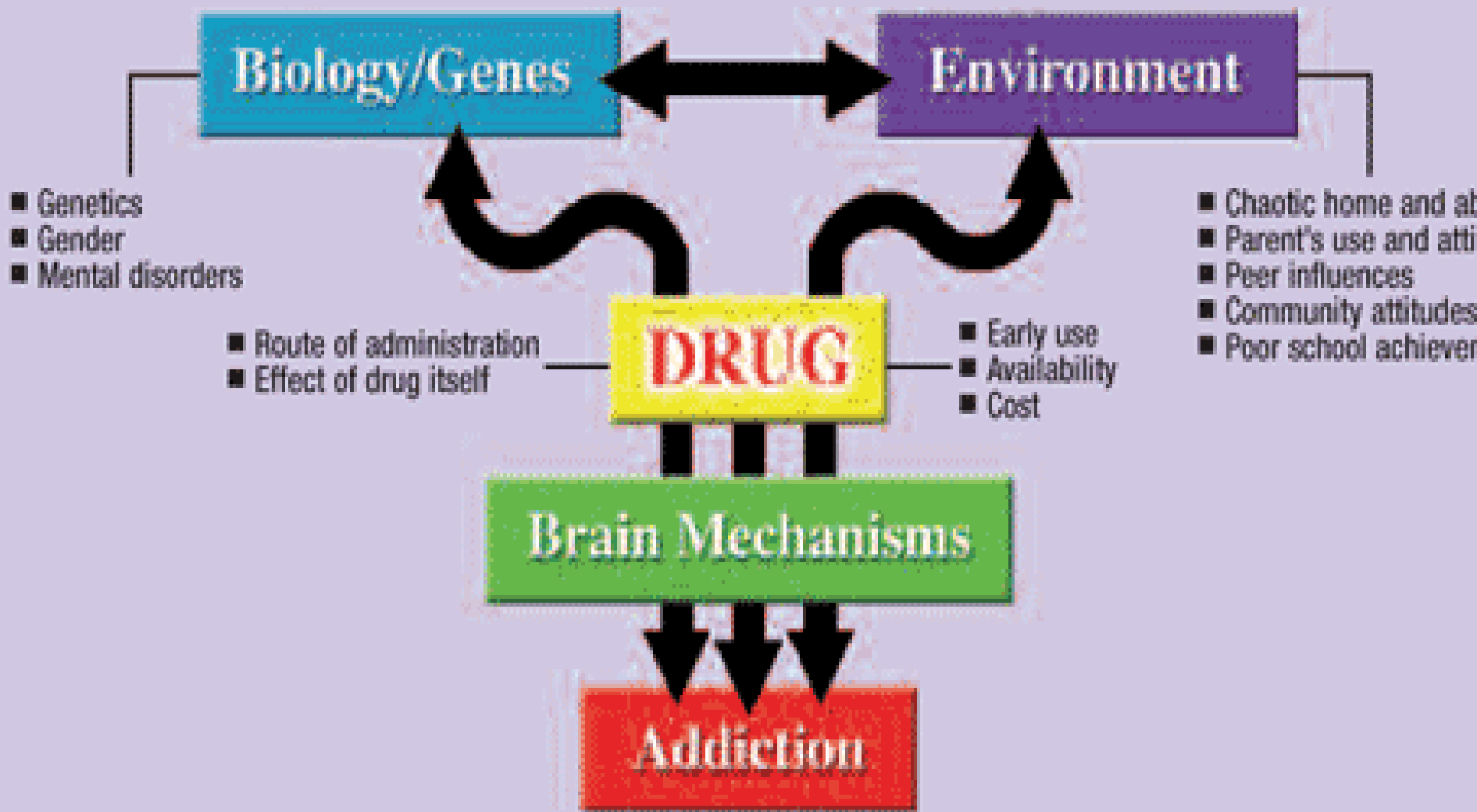


# Risk Factors

19

- **Brain “Fault Lines”**: Genetics and neurobiology
- **“Toxic Stress”**: Epigenetics, environmental and developmental challenges from infancy to adulthood.
- **Exposure in a pattern of persistent conditioning.**

# RISK FACTORS



# Adverse Childhood Experiences

21

- **The Relationship of Adult Health Status to Childhood Abuse and Household Dysfunction. American Journal of Preventive Medicine. Felitti VJ, Anda RF, Nordenberg D, et al. 1998; 14:245 – 258**
- **Kaiser Permanente Department of Preventive Medicine**
- **N = 17,000**

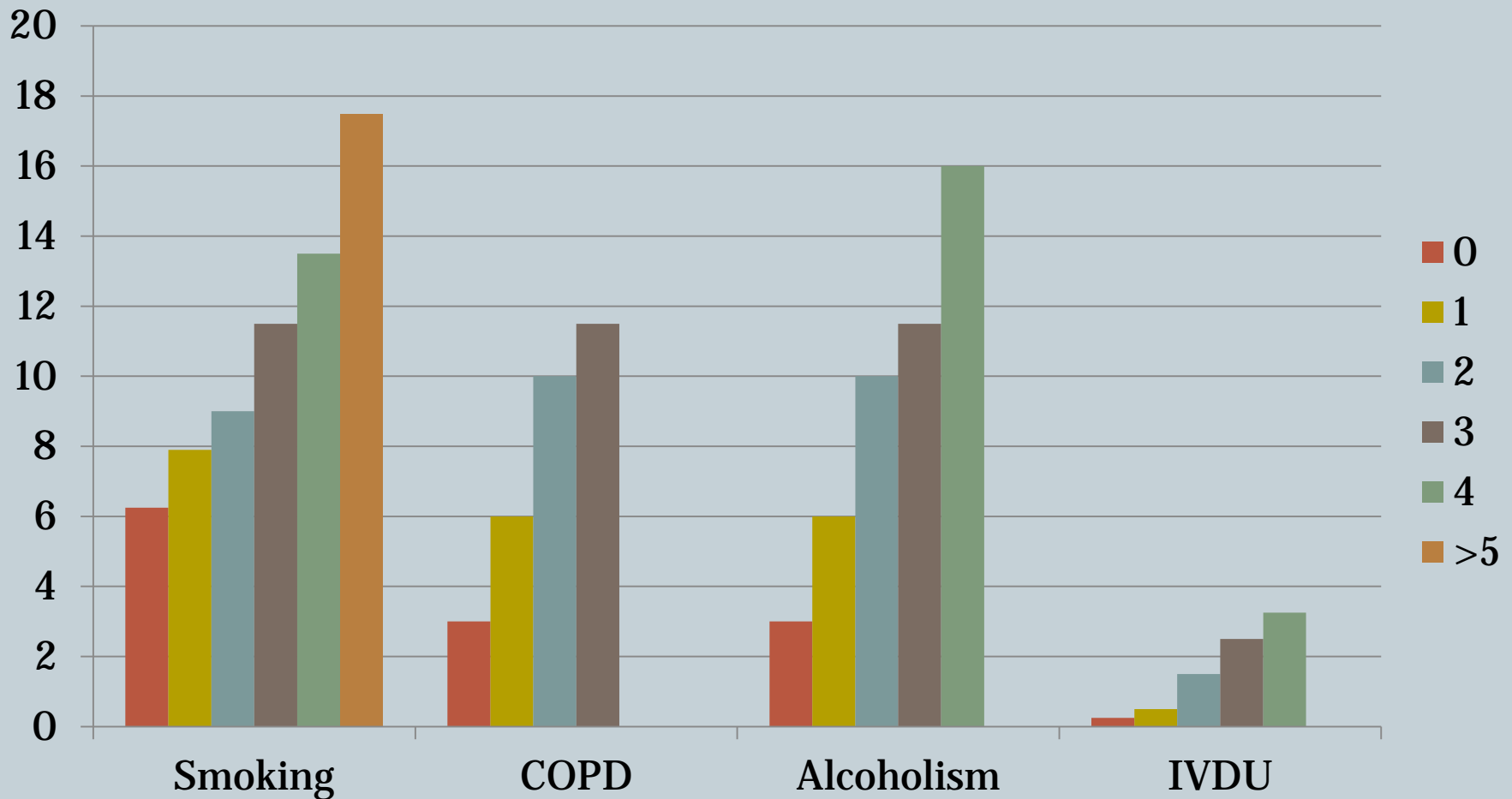
# Adverse Childhood Experiences

22

- Recurrent and severe physical abuse
- Recurrent and severe emotional abuse
- Sexual abuse
- Growing up in a household with:
  - An alcoholic or drug user
  - A member being imprisoned
  - A mentally ill member
  - The mother being treated violently
  - Both biological parents not being present

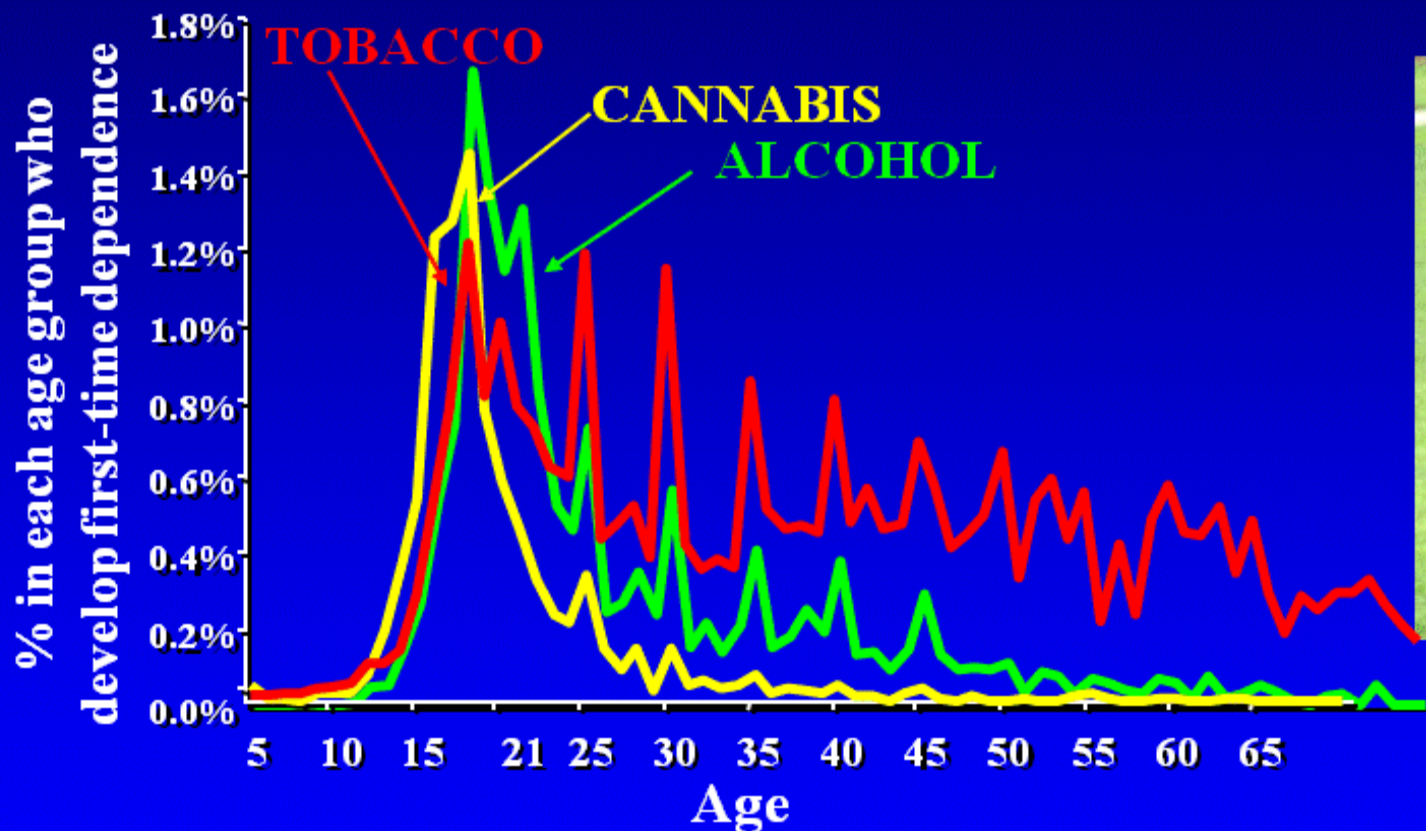
# Adverse Childhood Experiences and Health

23



The Relationship of Adult Health Status to Childhood Abuse and Household Dysfunction. Prof. Am J of Prev Med Felitti et al. 1998; 14:245-258

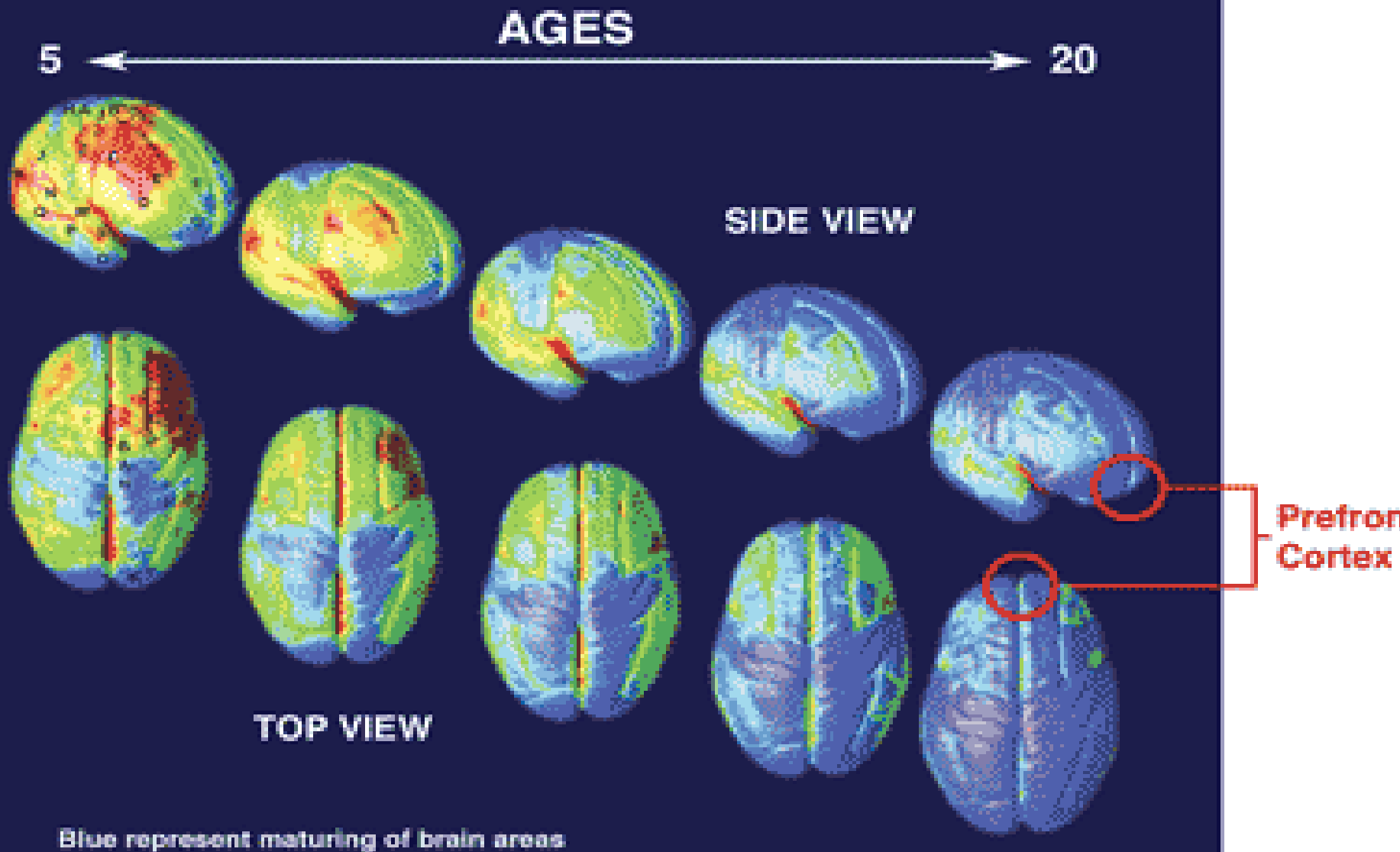
# *Addiction Is A Developmental Disease that starts in adolescence and childhood*



Age at **tobacco**, **alcohol**, and **cannabis** dependence per DSM IV



# IMAGES OF BRAIN DEVELOPMENT IN HEALTHY CHILDREN AND TEENS (AGES 5-20)



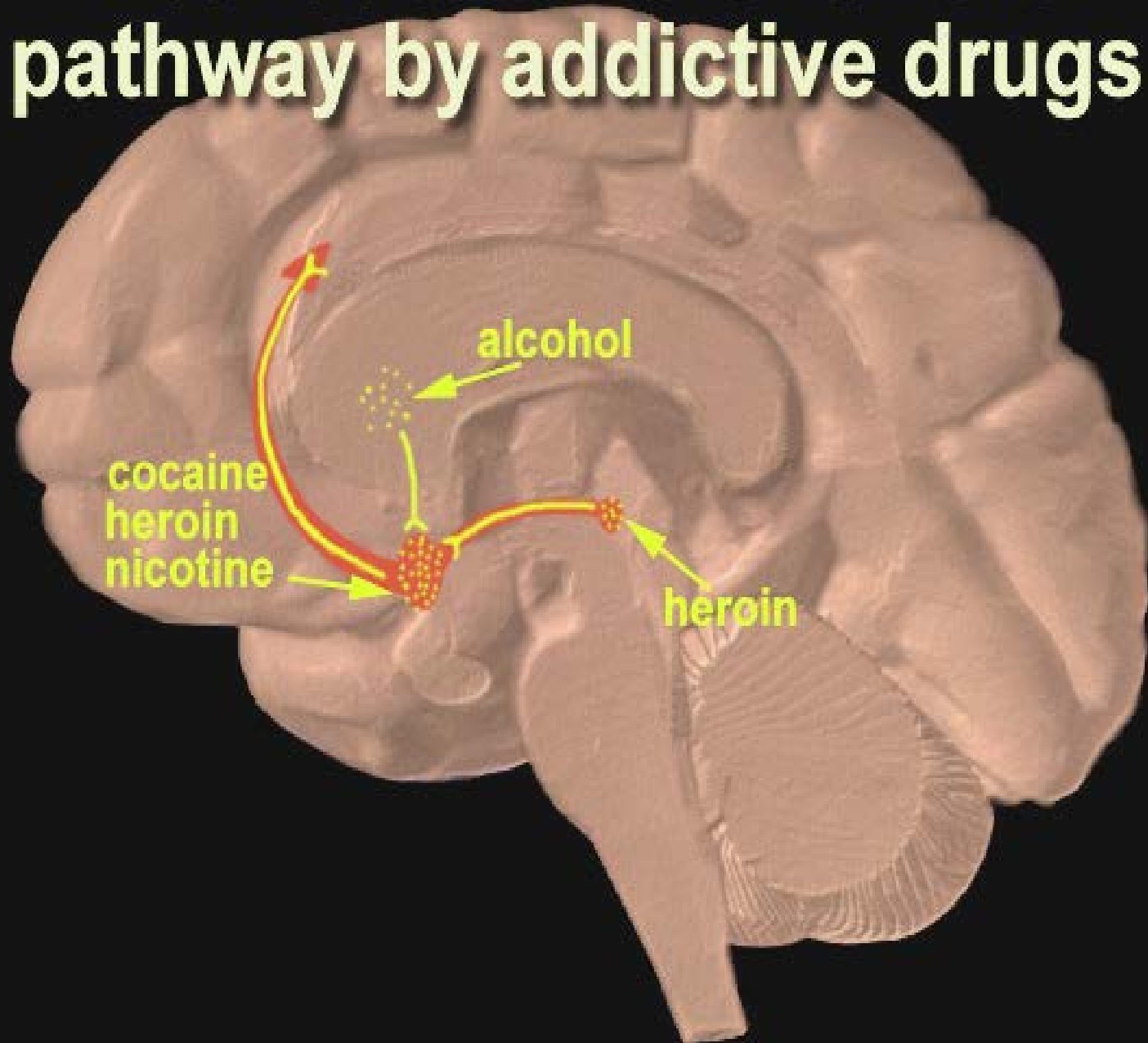
Blue represent maturing of brain areas

# Why is Addiction so Powerful?

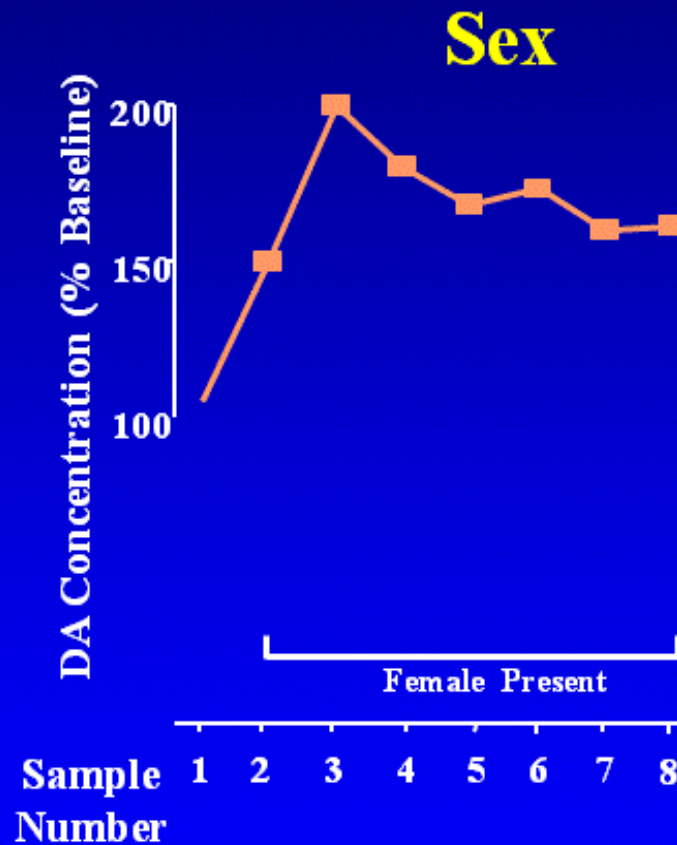
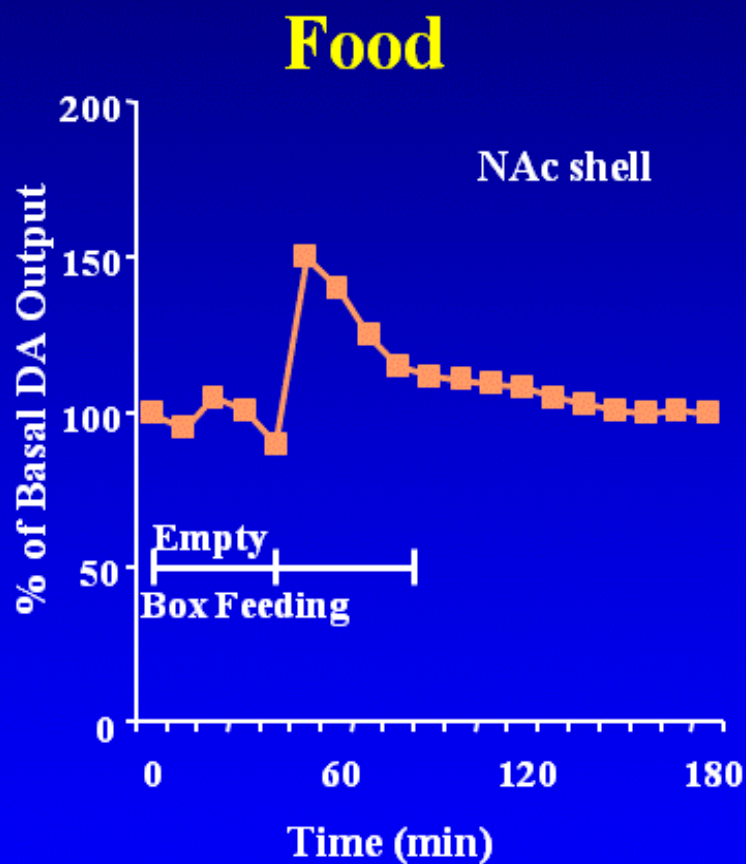
26

## **ADDICTION AND THE BRAIN**

# Activation of the reward pathway by addictive drugs

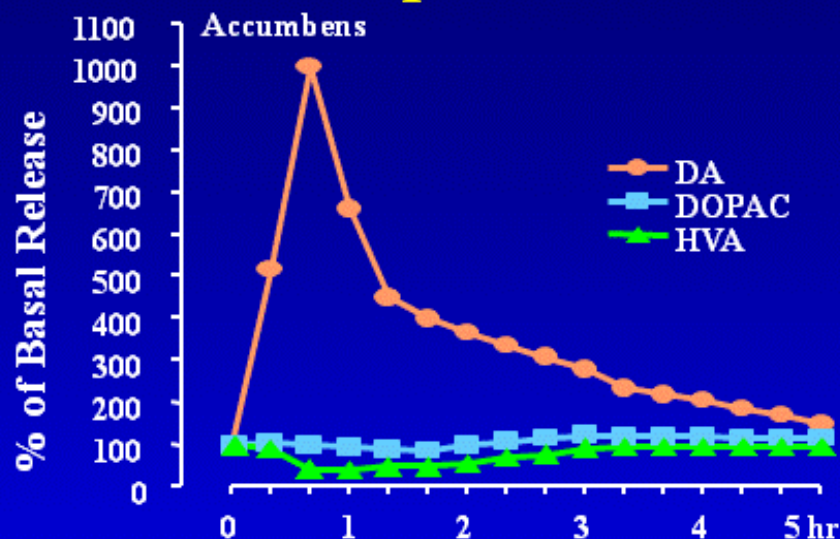


# Natural Rewards Elevate Dopamine Levels

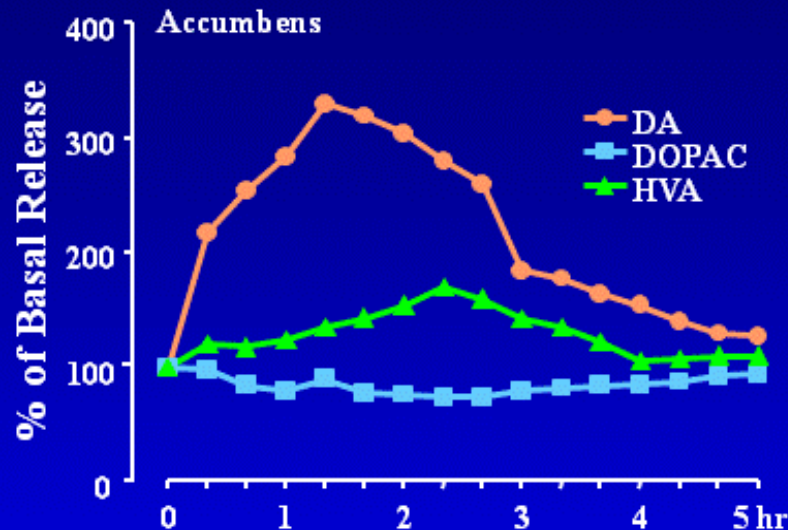


# Effects of Drugs on Dopamine Release

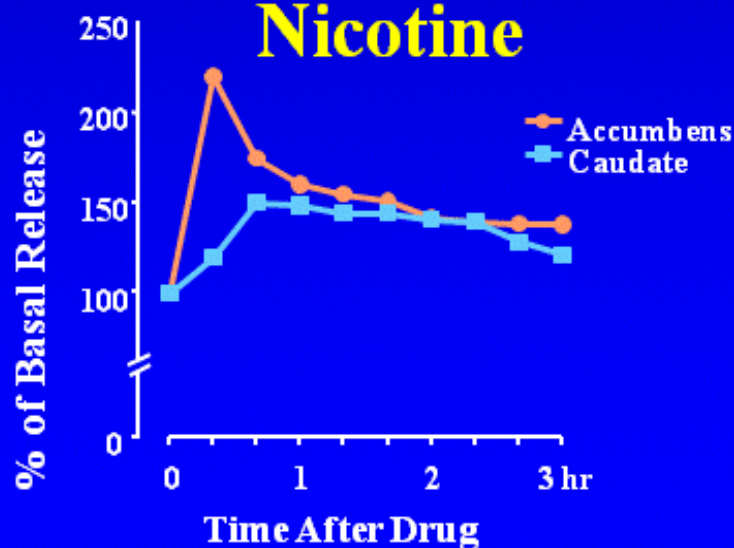
## Amphetamine



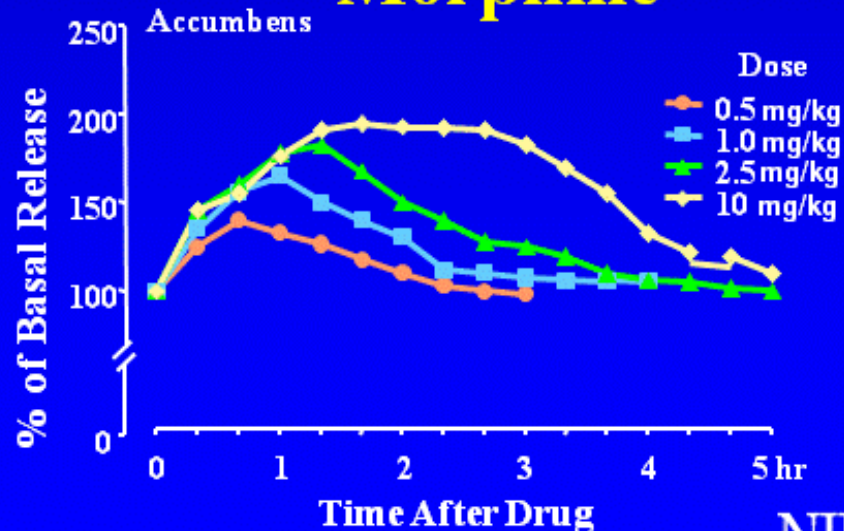
## Cocaine



## Nicotine



## Morphine



# Progression from Abuse to Addiction

30

- **Loss of normal reward and motivational systems.**
- **Everything becomes drug focused.**
- **It becomes harder to feel “high”.**
- **One then uses simply to feel “normal” and avoid depression or withdrawal.**

# From Getting High to Being Down

31

- **High**

- **Normal**

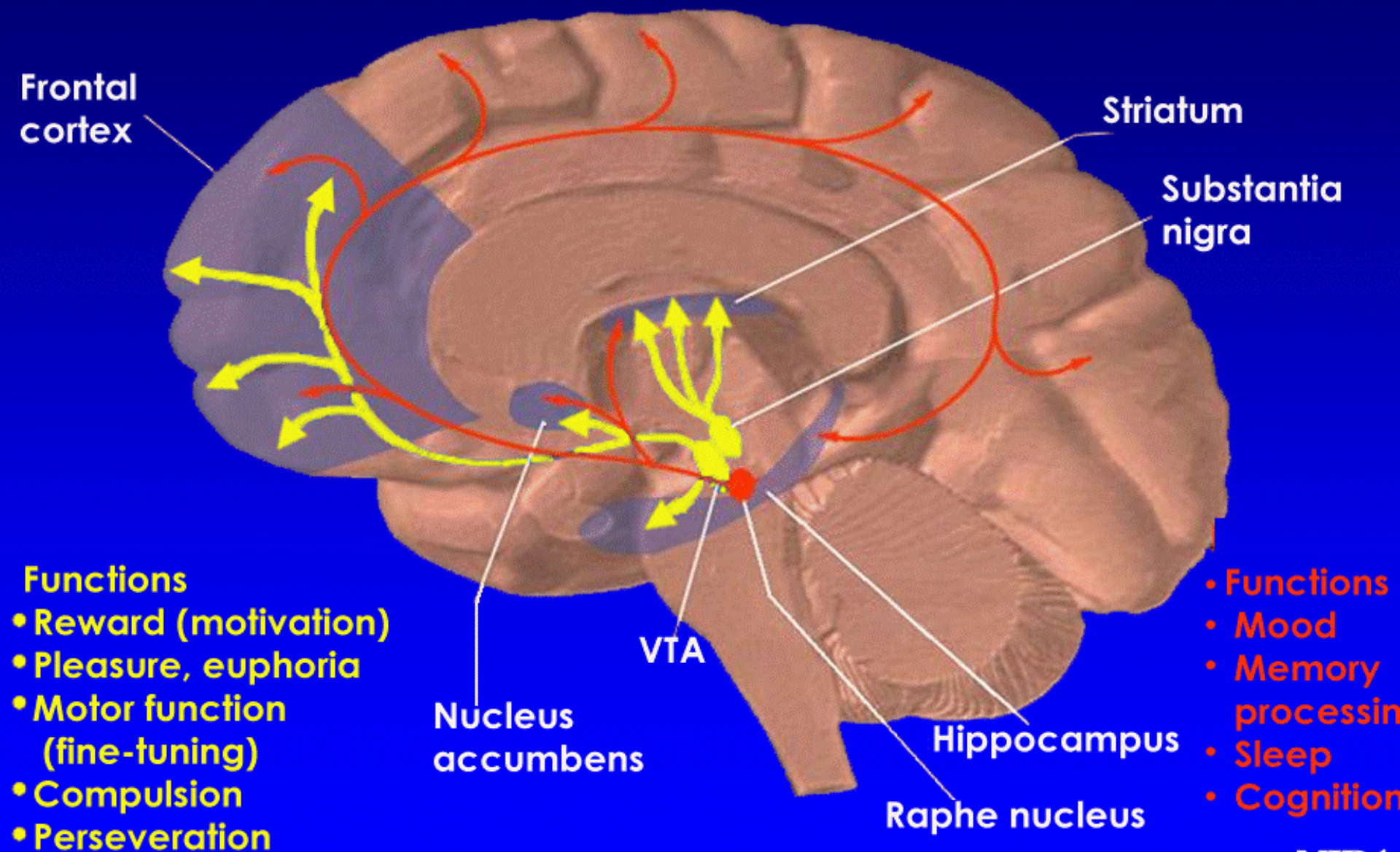
- **Down**





# Dopamine Pathways

# Serotonin Pathways

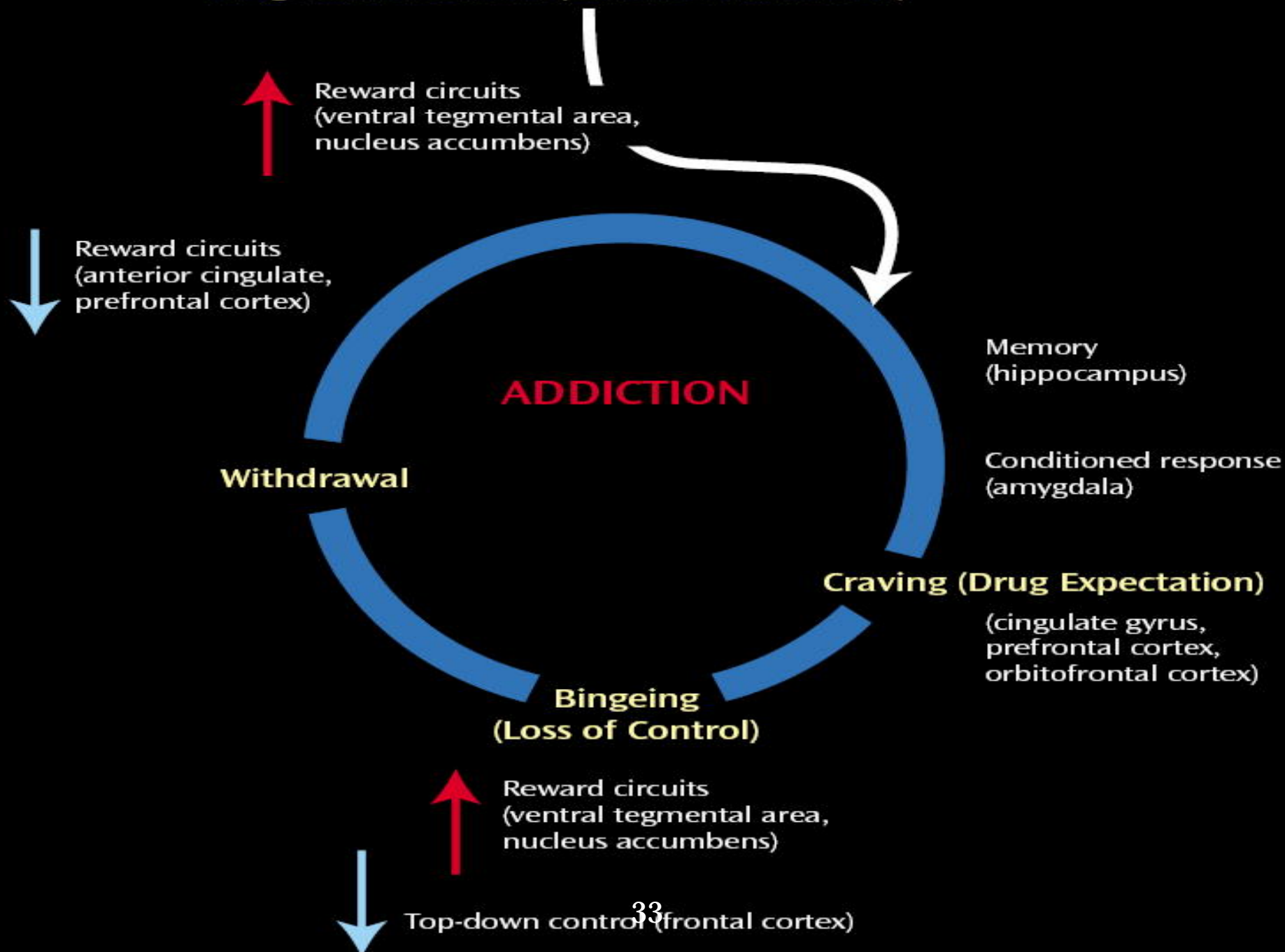


- Functions**
- Reward (motivation)
  - Pleasure, euphoria
  - Motor function (fine-tuning)
  - Compulsion
  - Perseveration

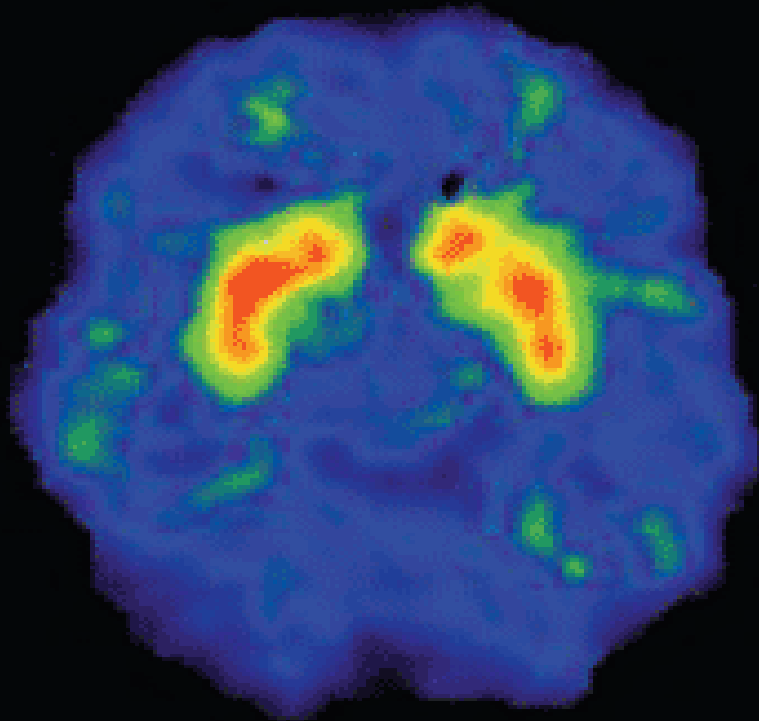
- Functions**
- Mood
  - Memory processing
  - Sleep
  - Cognition



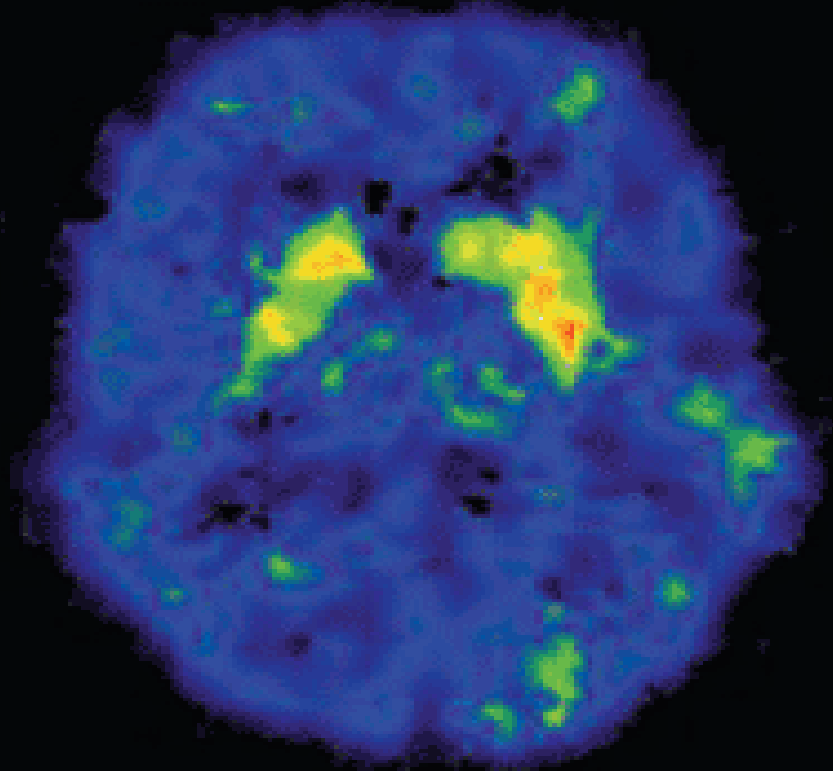
# Drug Reinforcement (Salience Attribution)



# DECREASED BRAIN FUNCTION IN METHAMPHETAMINE ABUSER



**Healthy Control**



**Drug Abuser**

Methamphetamine abusers have significant reductions in dopamine transporters.

Source: *Am J Psychiatry* 158:377-382, 2001.

# The Neuroscience of Addiction

35

## **A Brain Disease:**

- **An “Acquired Brain Injury” with**
- **Disruption of the Reward and Motivation centres &**
- **Irrational thought patterns and behaviour.**

# BUT it is not just a Brain Disease

36

## It effects

- Spirit
- Mind and
- Body

# Treatment

37

**A PROCESS,  
NOT AN EVENT**

# Addiction as a Chronic Disease

38

- A chronic disease requires care that is:
- Sustained
- Continuous
- Monitored
- Individualized and
- Coordinated
  
- Adjusts to cycles of remission and relapse.

# Substance Dependence Treatment

39

- **Supportive Maturation**
- **Variations on a Matrix Model**
- **Concurrent integrated therapy**
- **Medication**
- **Follow-up**

# Matrix Model

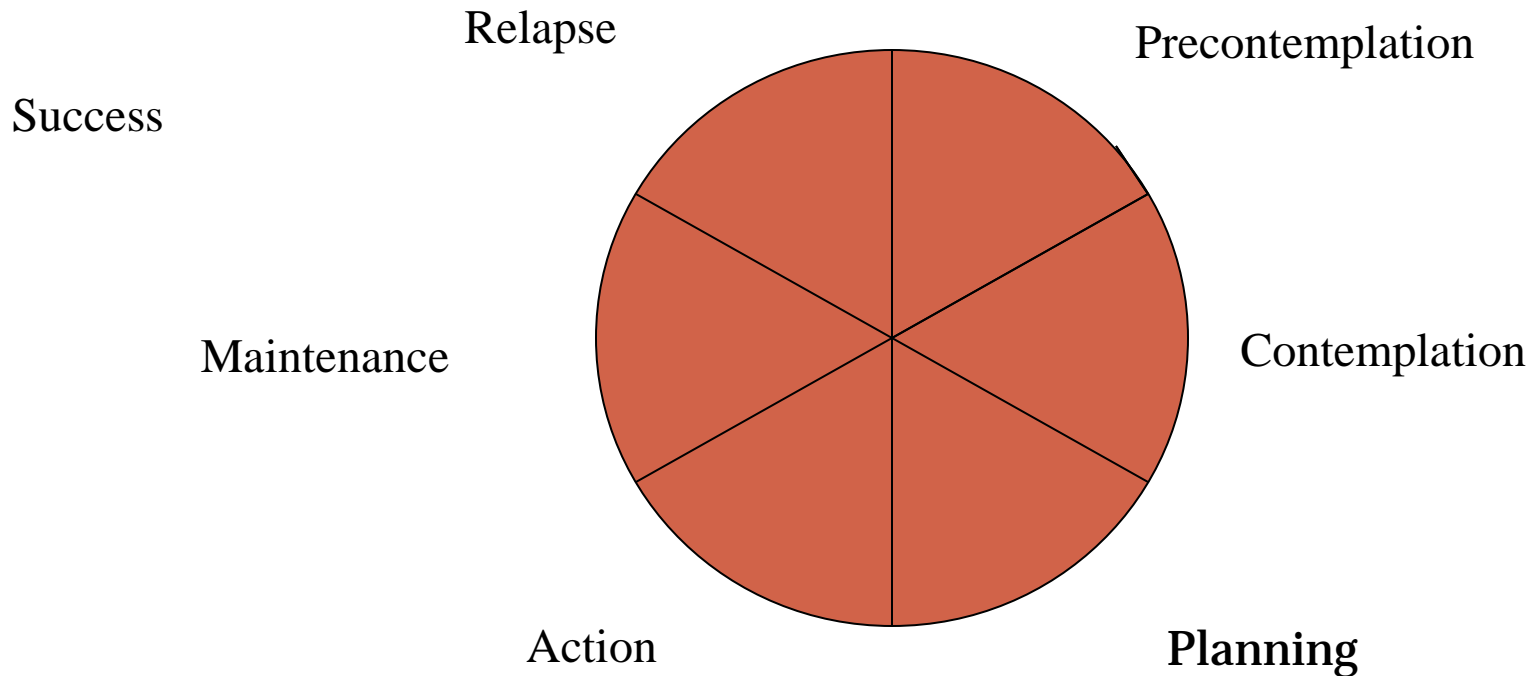
40

- **Manual based 16 week non-residential psychosocial approach:**
- **Individual Counseling**
- **Cognitive Behavioral Therapy**
- **Motivational Interviewing**
- **Family Education Groups**
- **Urine testing**
- **12 step programs**
- **Concurrent Care**



# Stages of Change

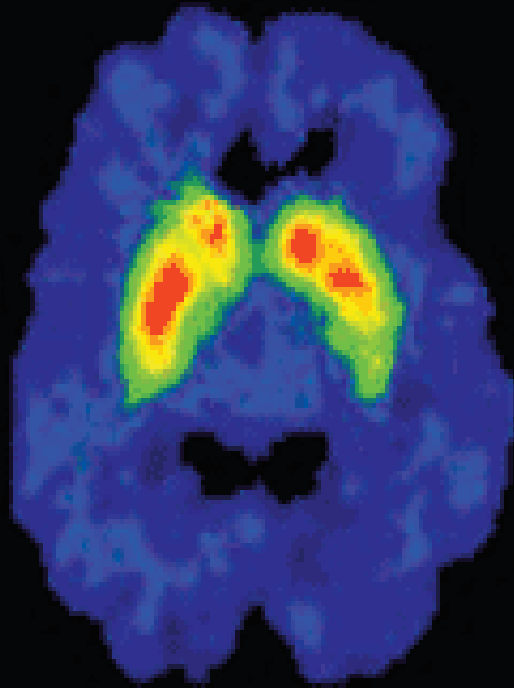
41



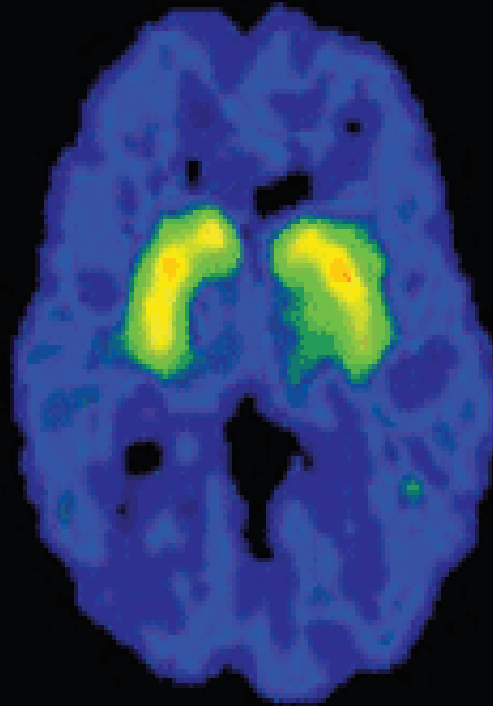
(Prochaska & Di Clemente)

# Treatment Works!

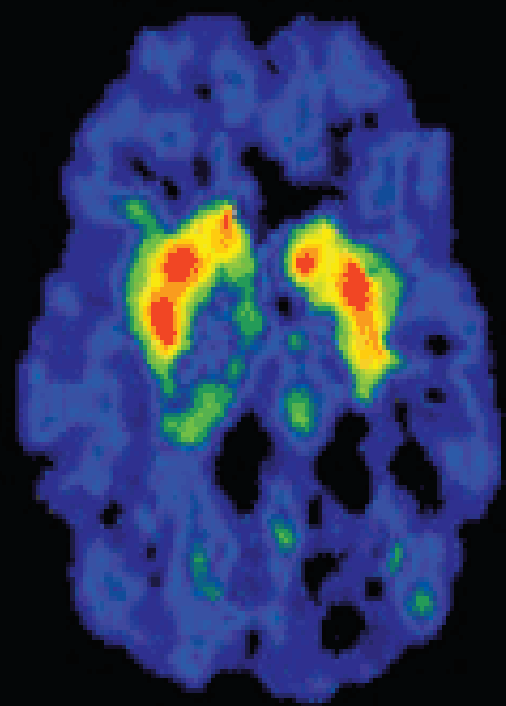
## RECOVERY OF BRAIN FUNCTION WITH PROLONGED ABSTINENCE



**Healthy Control**



**METH Abuser  
1 month abstinence**



**METH Abuser  
14 months abstinence**

# Thank you

43

**PETER.BUTT@USASK.CA**