Stimulants

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Ashley
Everything for Recovery

Chronology of Stimulant Misuse

1980s: Cocaine

1990s: Ecstasy, ADHD medications

2000s: Methamphatamine

2010s: Bath Salts

Desired Effects

- Enhanced mood and euphoria
- Increased attention and alertness
- Decreased need for sleep
- Appetite Suppression
- Sexual arousal

Adverse Effects

- Psychosis
- Tachycardia, arrhythmias, heart attack
- HTN, stroke
- Hyperthermia, rhabdomyolysis
- Multisystem organ failure

Tolerance

- No longer-term tolerance
- Acute tachyphylaxis- “first dose” effect
  - Cardiovascular Effects
  - Euphoria and sexual arousal
- Anorexia

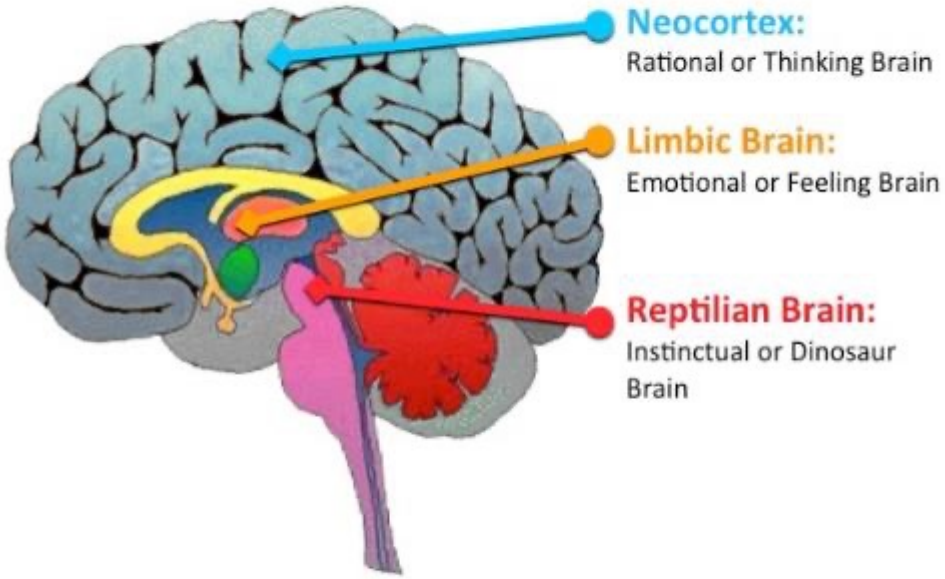
Sensitization

- Seizures
- Psychosis
  - Paranoid delusion
  - Visual, auditory, tactile hallucinations
  - Looks like schizophrenia acutely
- Stereotypical Behaviors
  - Checking
  - Hoarding

Withdrawal

- Anhedonia and depressed mood
- Increased appetite
- Anergia and fatigue
- Vivid (unpleasant) dreams
- Insomnia or hypersomnia

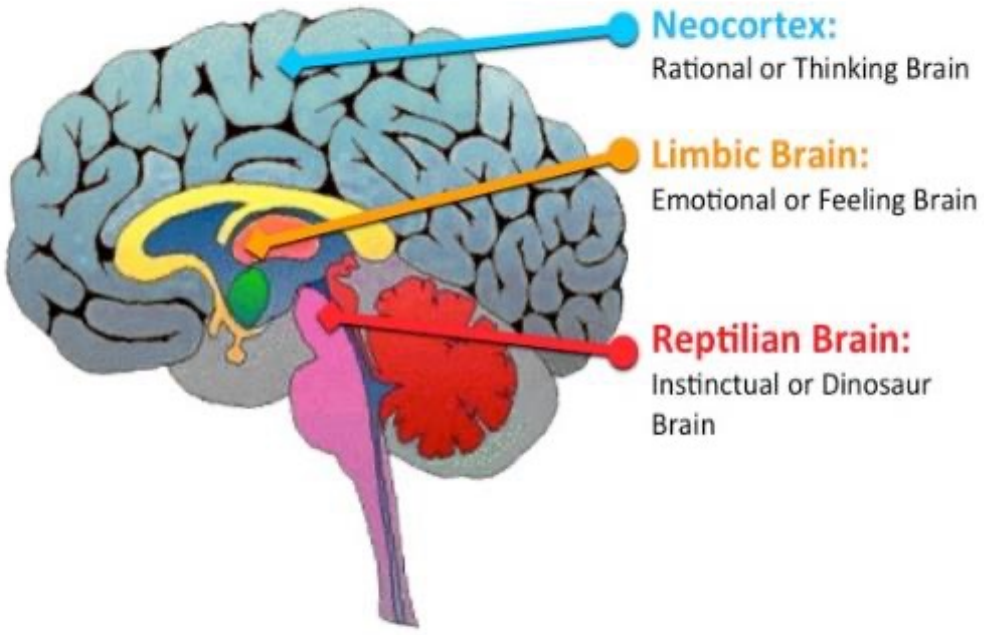
Reptilian Brain



Reptilian Brain= Survival

- Water
- Food
- Sex
- Child-rearing

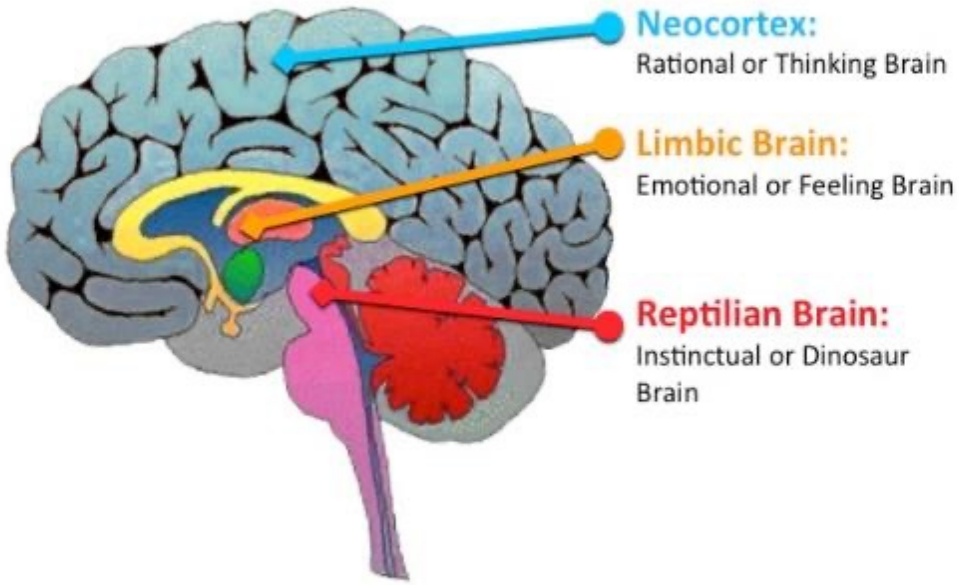
Adding Mind/Mood Altering Drugs



Reptilian Brain= Survival

- Water
- Food
- Sex
- Child-rearing
- **Drug of Choice**

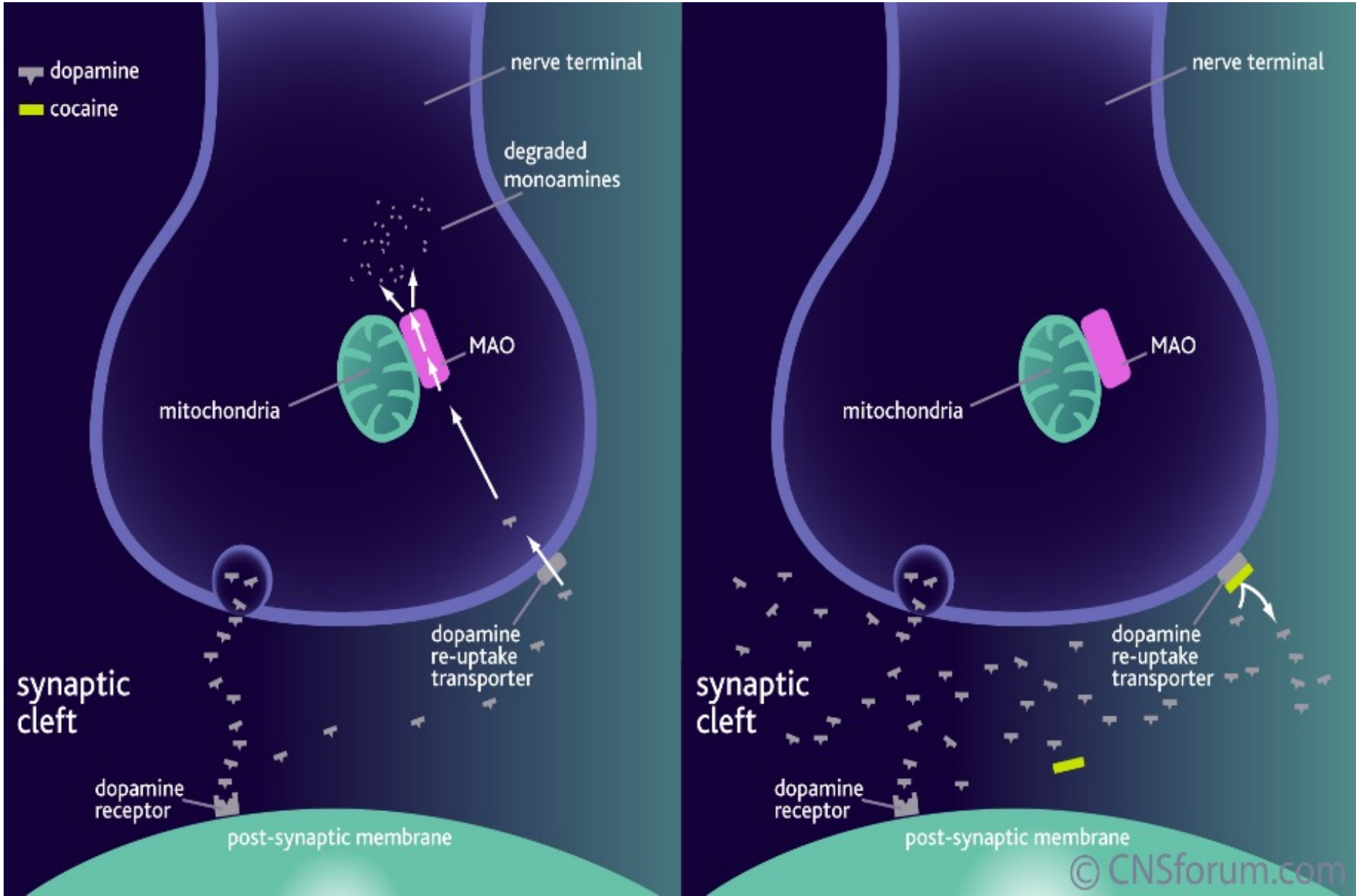
Effects of Drugs over Time



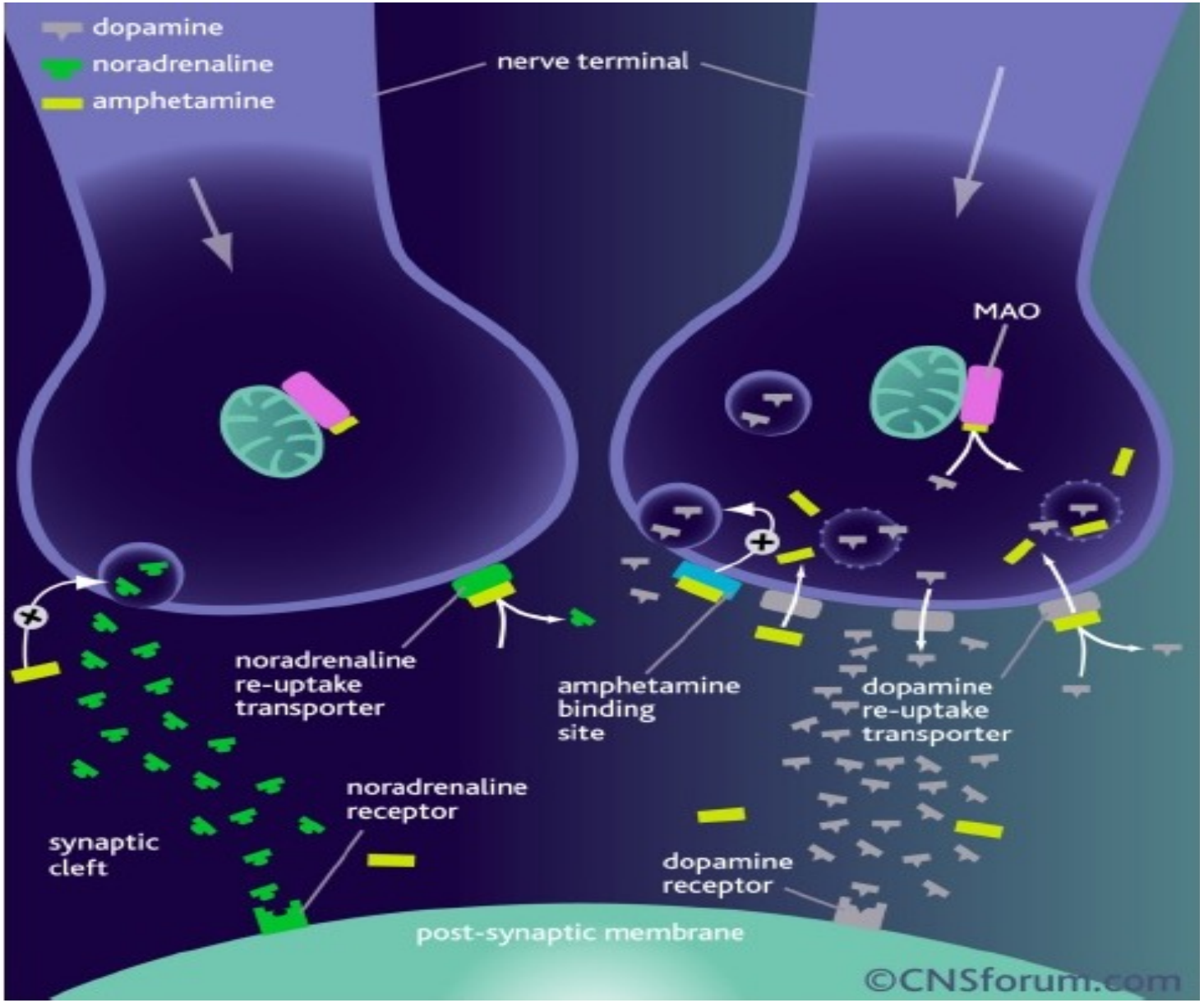
Reptilian Brain= Survival

- **Drug of Choice**
- Water
- Food
- Sex
- Child-rearing

Mechanism of Action- Cocaine



Mechanism of Action- Meth

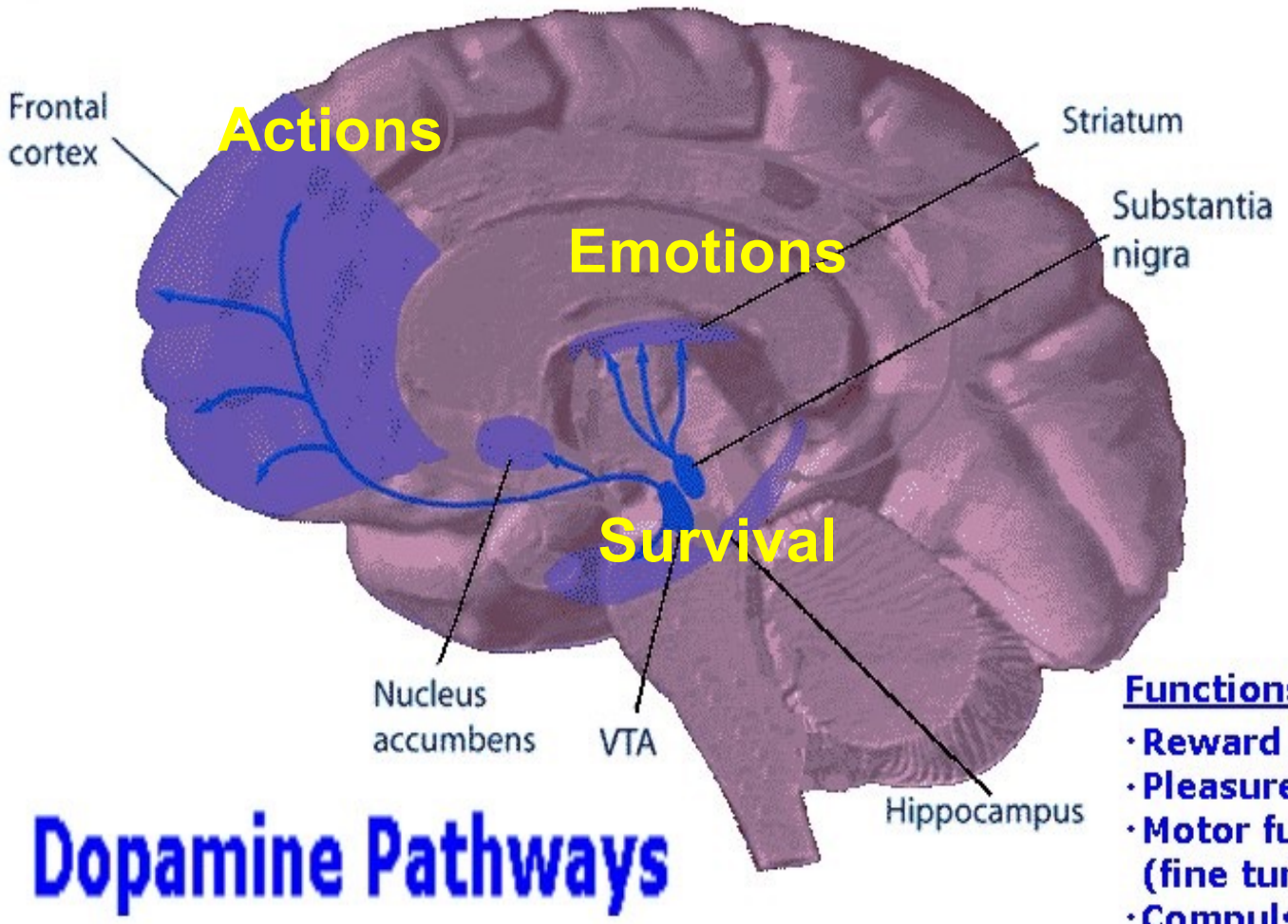


Dopamine Release by Drug

- Sweet food - 150%
- Sex - 200%
- Morphine - 200%
- Alcohol - 200%
- Nicotine - 225%
- Cocaine - 300%

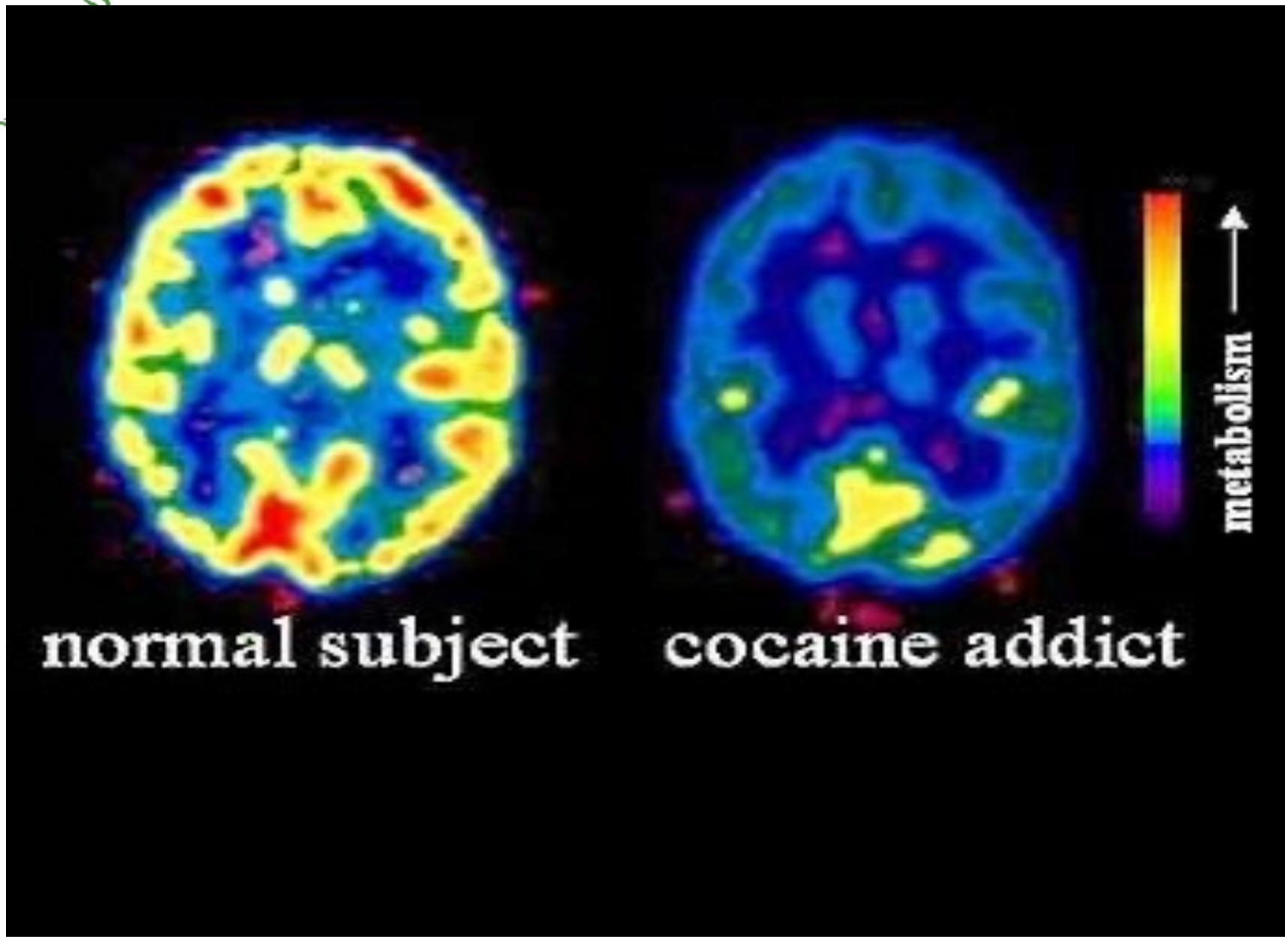
- **Crystal meth - >1000%**

Dopamine

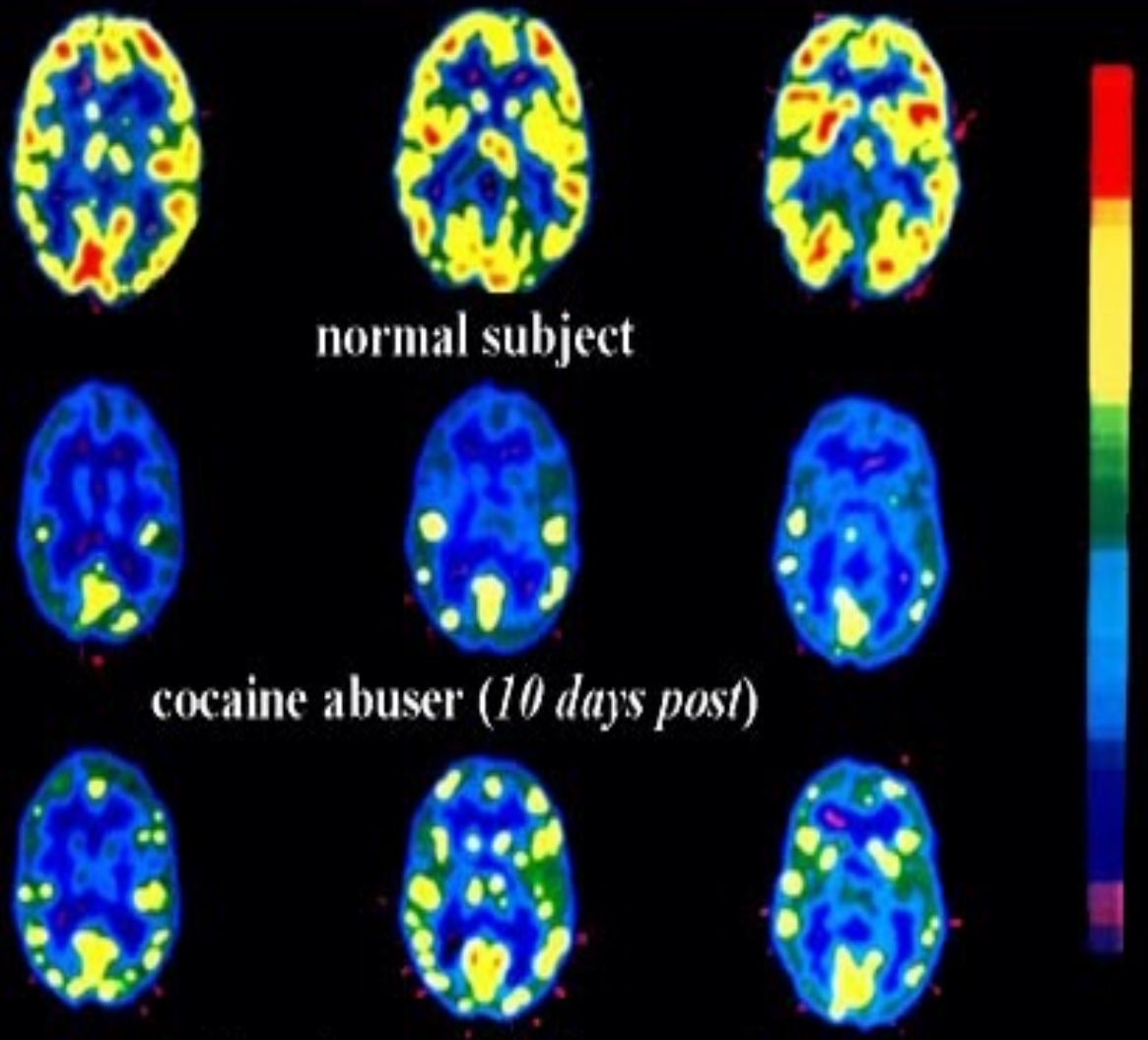


Functions

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


normal subject
cocaine addict
metabolism

Cocaine Abuse and Brain Glucose Metabolism



normal subject

cocaine abuser (*10 days post*)

cocaine abuser (*100 days post*)

Volkow, N.D. et al., Synapse, 11, pp. 184-190, 1992; Volkow, N.D. et al. Synapse, 14, pp. 169-177, 1993.

History of Prescribed Stimulant Misuse

1937- Discovered usefulness in managing symptoms of ADHD

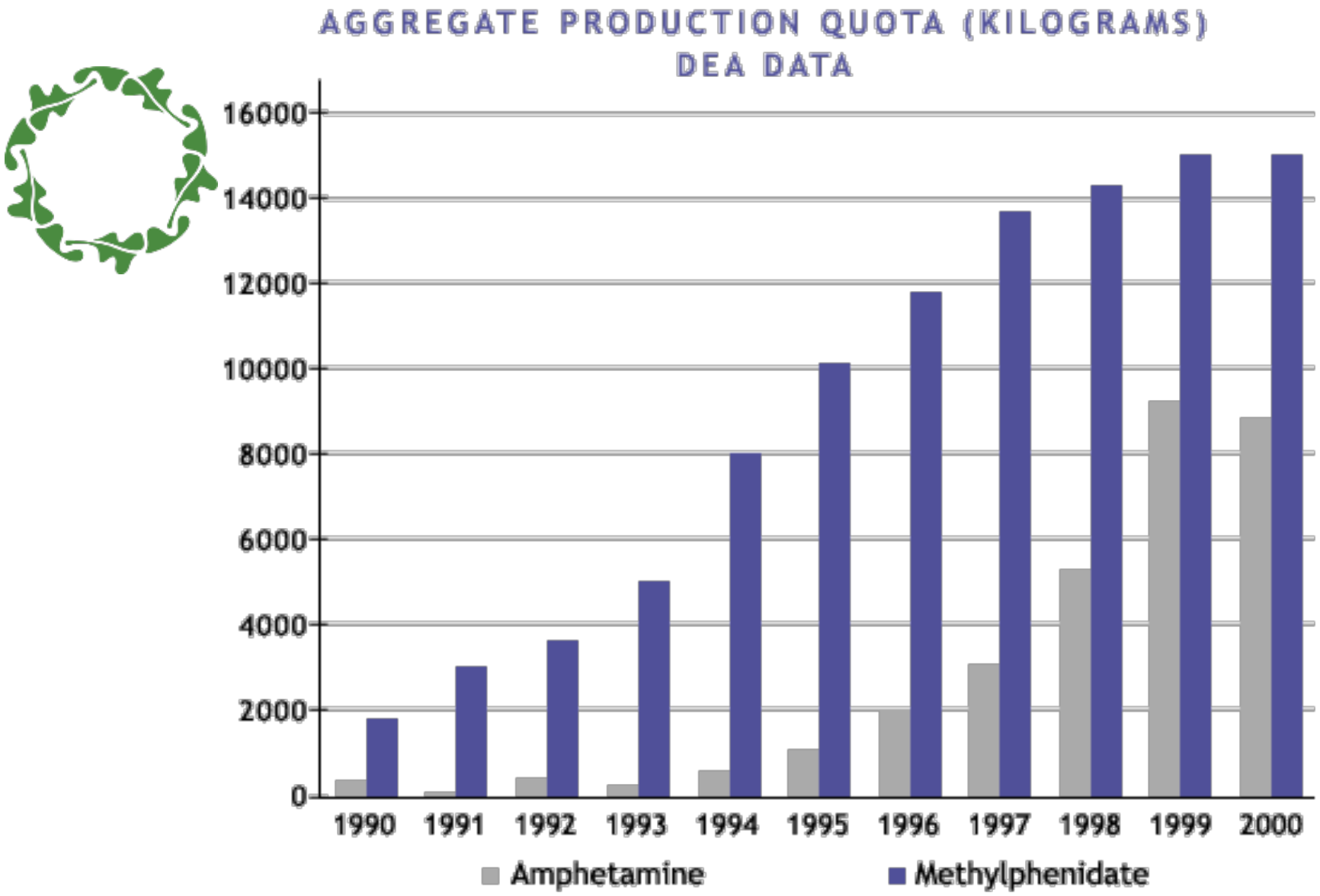
1960- Increase in prescriptions for the treatment of ADHD

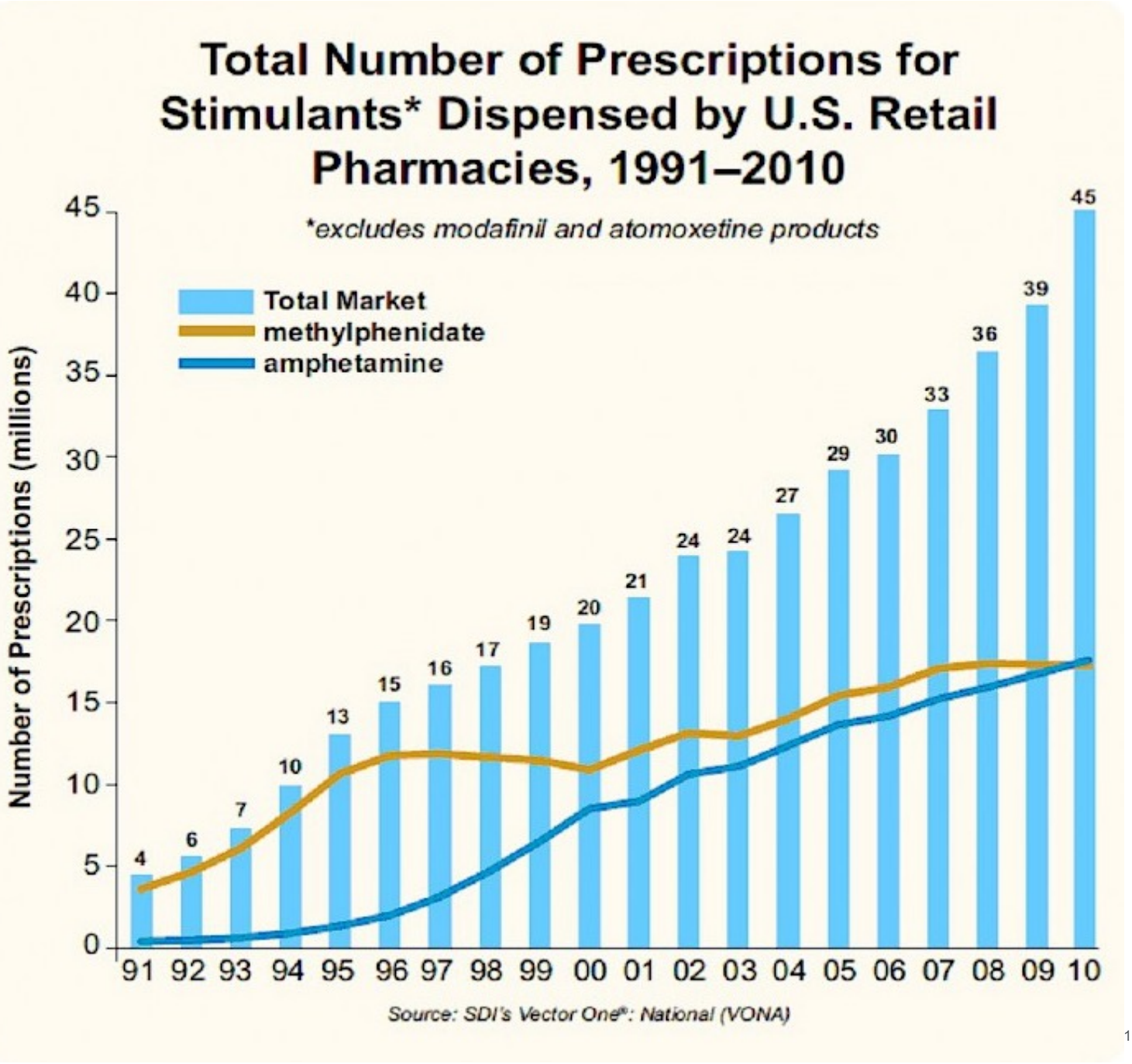
1987- Use among youth 0.6%

2002- Use among youth 2.9%

2013- Misuse widely recognized as a serious problem

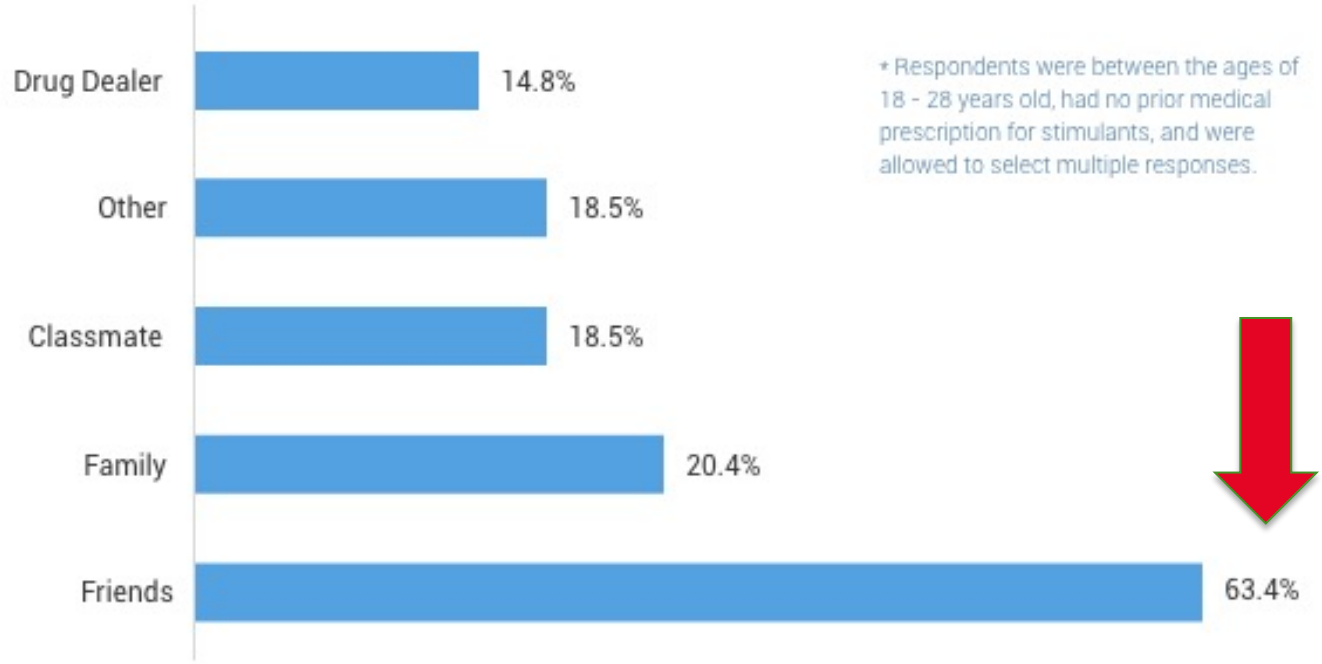
Current- Prevalence of misuse on college campuses 13-23% (some estimates as high as 43%)


AGGREGATE PRODUCTION QUOTA (KILOGRAMS)
DEA DATA
16000
14000
12000
10000
8000
6000
4000
2000
0
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
Amphetamine
Methylphenidate


Total Number of Prescriptions for Stimulants* Dispensed by U.S. Retail Pharmacies, 1991–2010
*excludes modafinil and atomoxetine products
Total Market
methylphenidate
amphetamine
Number of Prescriptions (millions)
0
5
10
15
20
25
30
35
40
45
4
6
7
10
13
15
16
17
19
20
21
24
24
27
29
30
33
36
39
45
91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06 07 08 09 10
Source: SDI's Vector One®: National (VONA)

Acquiring Prescription Stimulants

(n = 108)*



* Respondents were between the ages of 18 - 28 years old, had no prior medical prescription for stimulants, and were allowed to select multiple responses.

RECOVERY BRANDS

Data Collected and Sourced By: Recovery Brands, 2016

History of Methamphetamine

- Developed in Japan in 1919
- Wide use in World War II (both sides)
- 1950's- prescribed as a diet aid and antidepressant (Benzedrine)
- 1960's- Increase abuse (availability of injectable)
- 1970's- Motorcycle gangs controlled much of the production and distribution (crank)

1990's

- Rise of "primitive meth labs"
- Able to make meth out of over-the-counter materials
- Small yields

Today

- Megalabs- Most of which are in Mexico
- Able to make hundreds of pounds of very pure meth

Characteristics of Misusers

- About 47% of methamphetamine users reported prescription stimulant misuse
- Prescription stimulant misuse occurred earlier in life
- Mulidrug use is common in misusers of both
- Males more likely to misuse methamphetamine
- Methamphetamine users more likely to report substance abuse, mental health problems, deviant behaviors

Clinical Challenges

- No FDA-approved medications for the treatment of stimulant dependence
- No specific antidotes for stimulant intoxication- supportive treatment only
- Stimulant-induced deaths are increasing due to fentanyl co-administration

Thank you