

Science Public Health Drug Policy

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Five Questions

Should scientific principles affect drug policy?



Current, future challenges?



Recent advances to address challenges?



Limitations of science: Can science alone achieve goals?

Drug rewards sensed by many different brains

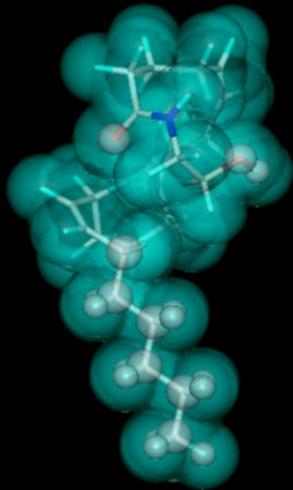
Drug control policies are a necessary public health response

DRUG	HUMAN	ANIMAL
Caffeine	Yes	Yes
Alcohol	Yes	[Yes]
Nicotine	Yes	[Yes]
Marijuana	Yes	[Yes]
Cocaine	Yes	Yes
Heroin	Yes	Yes
Hallucinogens	Yes	Some
Inhalants	Yes	?
Benzodiazepines	Yes	Yes

Drugs are “imposters” of brain messages and
affect chemical communication

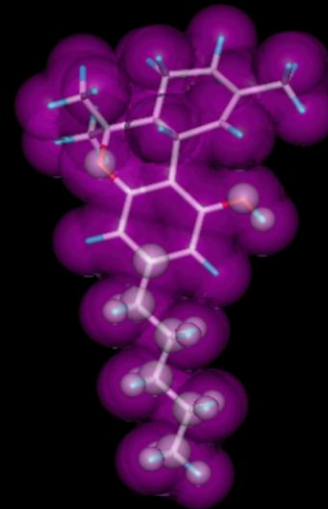
Brain cannabinoid and Δ 9-THC

Brain's Chemical



Anandamide

Drug



THC

Drugs Promote Brain Changes
in proteins, genes, cells, circuitry, behavior
Addiction can be viewed as a brain disease

Visible by imaging

Genes, cells, circuitry

Volkow et al, 2001, Robinson et al., 2001, Saka et al, 2004, Lehrmann et al, 2006

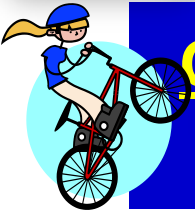
Addiction can result from repeated drug use in vulnerable populations

Drug use consequences

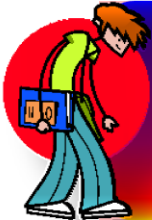
Addiction is not the only consequence



Prenatal exposure: linked to premature delivery, low birth weight, developmental disorders



Children of drug-abusing parents: have higher rates of abuse, neglect, higher rates of use



Adolescent drug use: associated with higher risk for addiction, poor school grades/drop-out, violence, unplanned pregnancy



Adults: Work performance compromised, increased error rates, absenteeism, injuries, poor health, high turnover

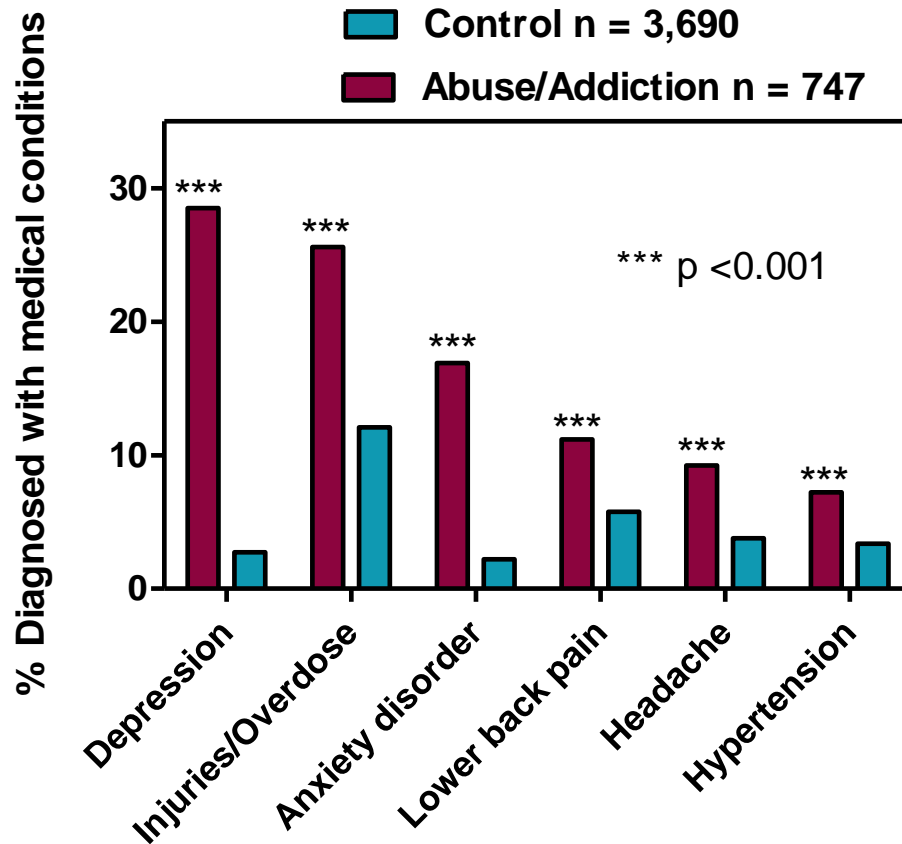


Elderly: Poor health, medication interactions, accidents, memory impairment

Medical and *Psychiatric Conditions* Occur More Frequently in DSM-IV Abuse/Dependent Patients

Drug policies should recruit medical professionals

Medical Occurances: Controls vs Abuse/Addiction



Challenges

Medical marijuana is a gateway to marijuana abuse

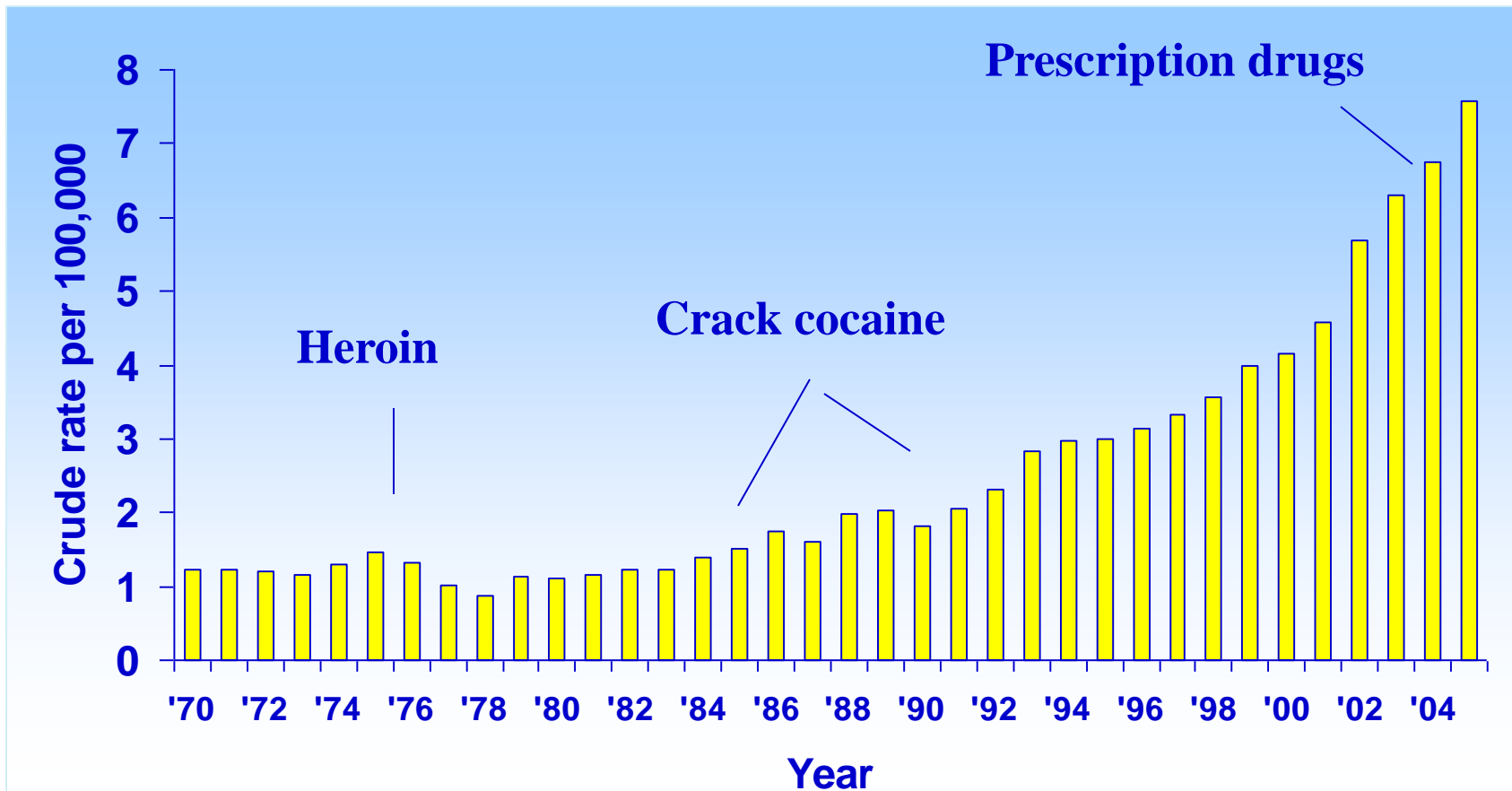
**Abuse of prescription drugs
Emerging synthetic and plant products**

Adolescent drug use

**The Unidentified
risky, problematic user,
abuser, addicted**

Challenge: Prescription drug overdose deaths rising rapidly

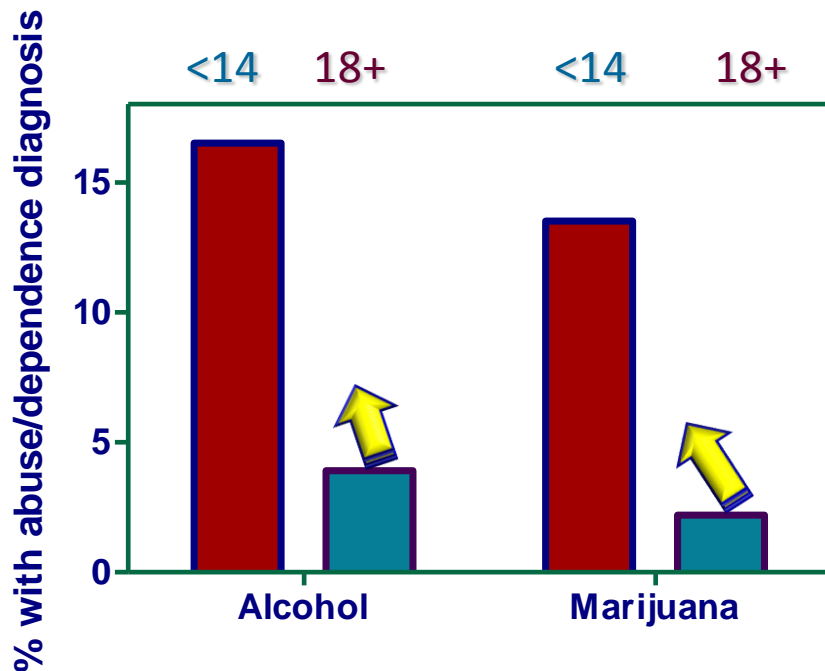
Unintentional drug poisoning (overdose) mortality in the US due to prescription drugs escalating (1970-2005)



(Source: Dr. L. Paulozzi, CDC, 2008)

Special challenge: The younger the age of first use, the higher the risk of addiction

Age at first use and abuse/dependence as adult



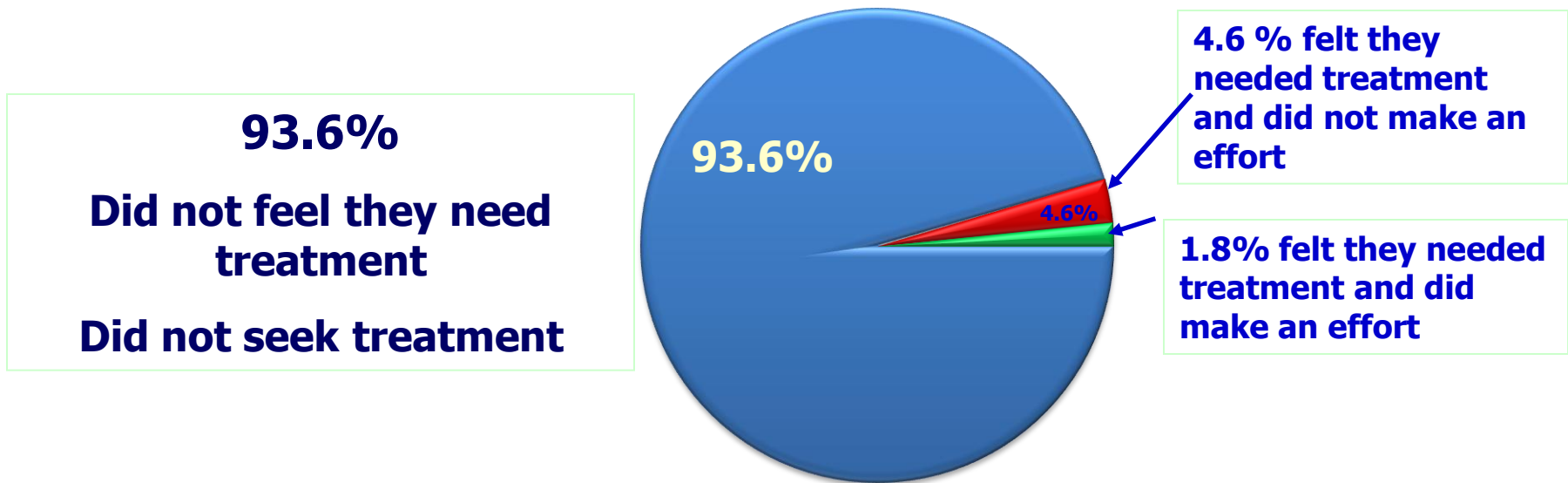
National Survey Drug Use and Health, 2008, NSDUH Sept 2009

**Elevated Risk for
Addiction to:**
Nicotine
Alcohol
Inhalants
Amphetamines
Cocaine
Opioids
Hallucinogens
Anxiolytics

Challenge: The majority of people with an illicit drug or alcohol disorder are unaware of the problem, do not seek help

Policy lesson:

- 1. Identify people who need treatment and offer treatment**
- 2. Identify people who engage in risky, problematic use**



21 Million People Need, But Do Not Receive Treatment for Illicit Drug or Alcohol Use

Effective Drug Policies: Solutions

Prevention Focus

- Drug supply and demand
- Adolescents: “Centroids”
- Parents as first line of defense
- Drug screening and testing

Intervention

- Widespread screening and interventions for risky, problematic use, addiction

Treatment

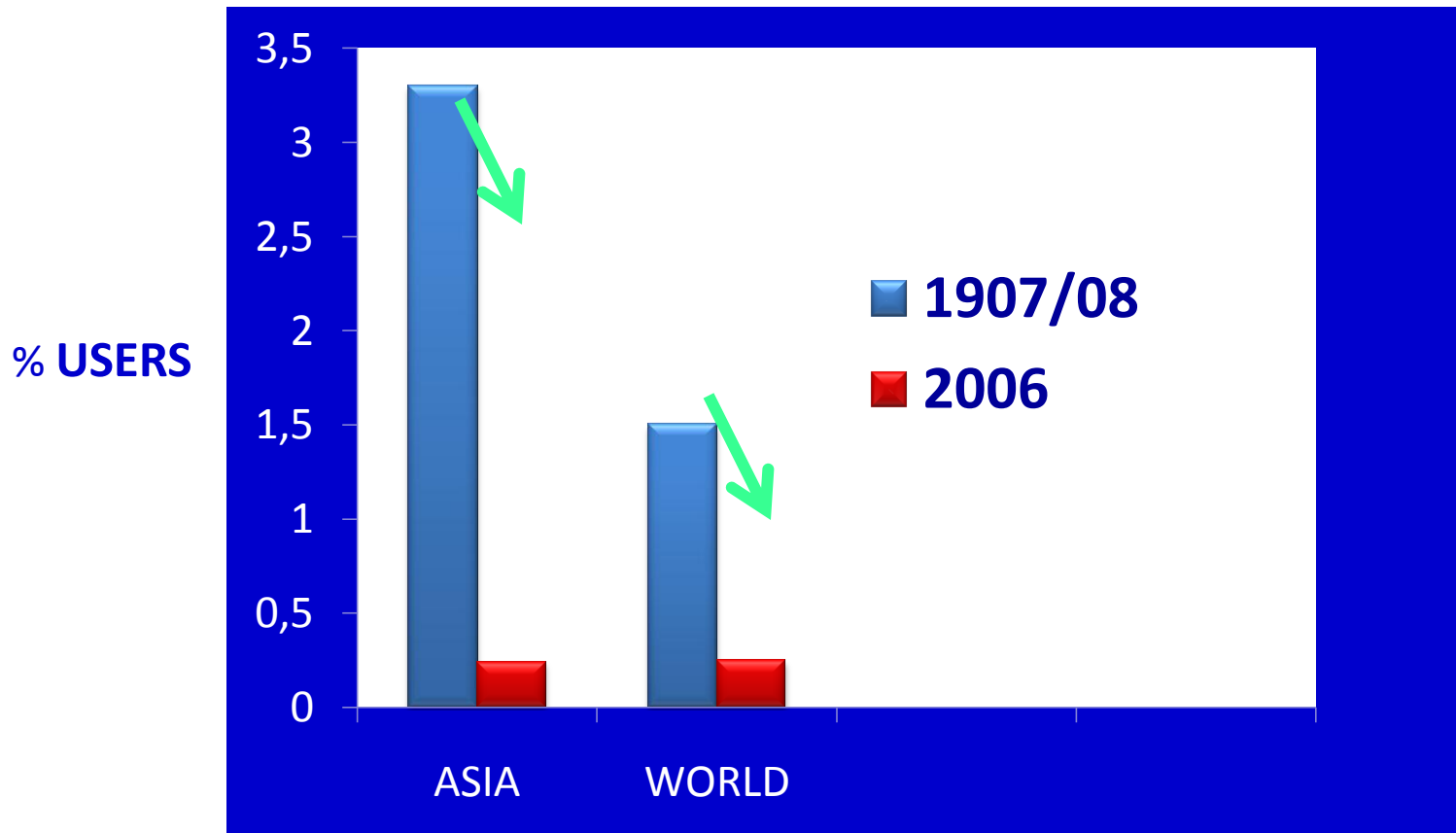
- Medicalization of treatment

Reliance on

- SCIENCE, STATISTICS, OUTCOMES, PODIUM, LEADERSHIP

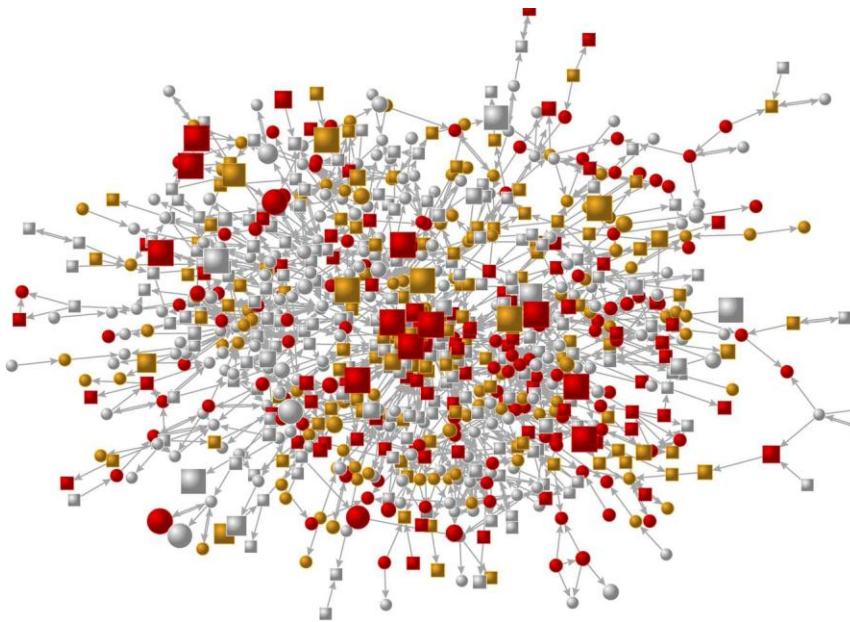
Prevention is effective!

OPIOID use declined dramatically from 1907/08 to 2006



Source: UN Office on Drugs and Crime, 2008 Report

Prevention policies: Address the “centroid”



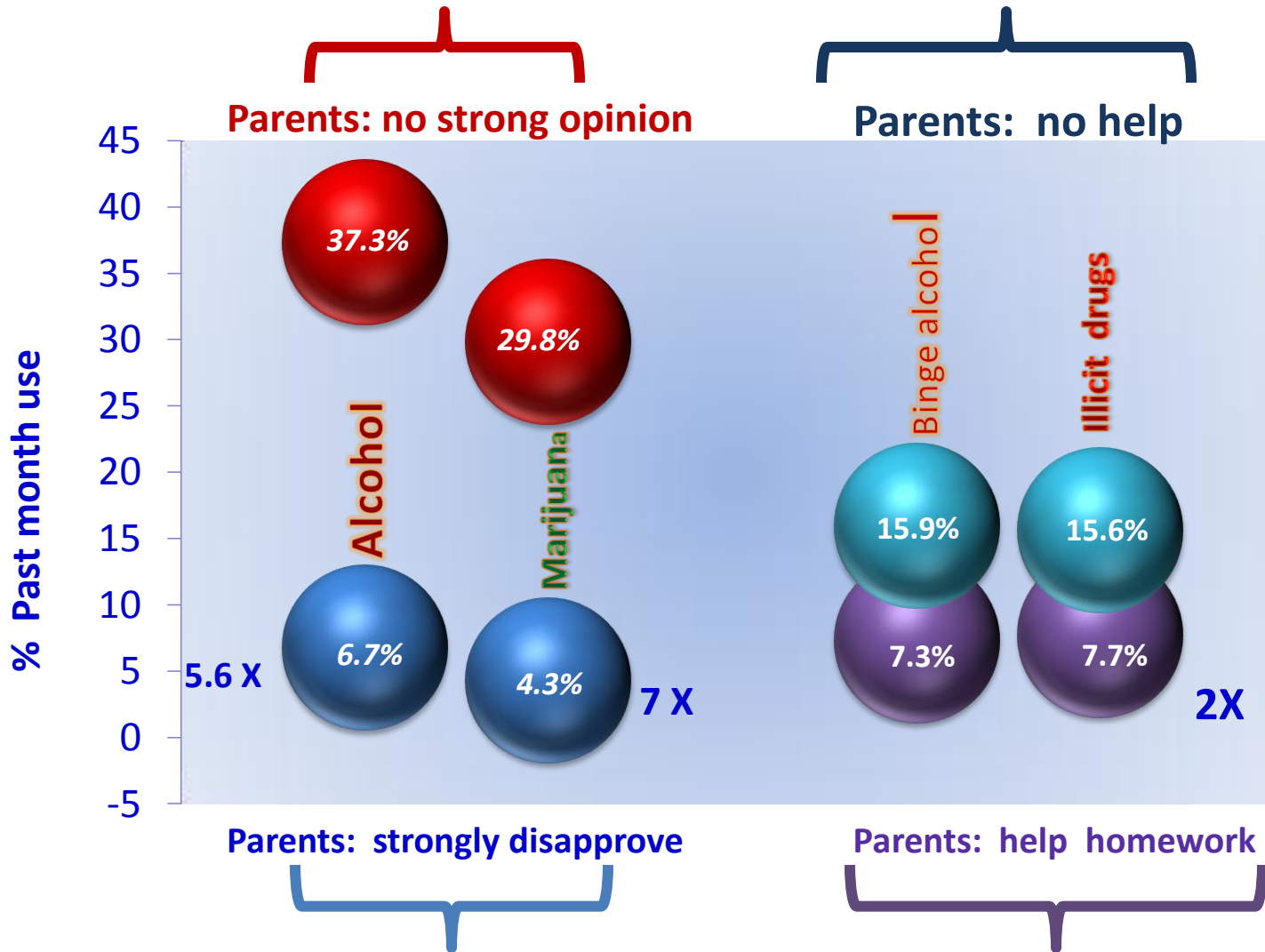
Poor sleep associated with higher marijuana use

Poor sleep, marijuana use spread through social networks

Youth at the crossroad of networks more vulnerable

4 degrees of separation can still influence behavior

Prevention Policies: Educate parents



NSDUH 2008, released Sept 2009

Intervention Policy Solutions: SBIRT as a Public Health solution to drug use, abuse, addiction

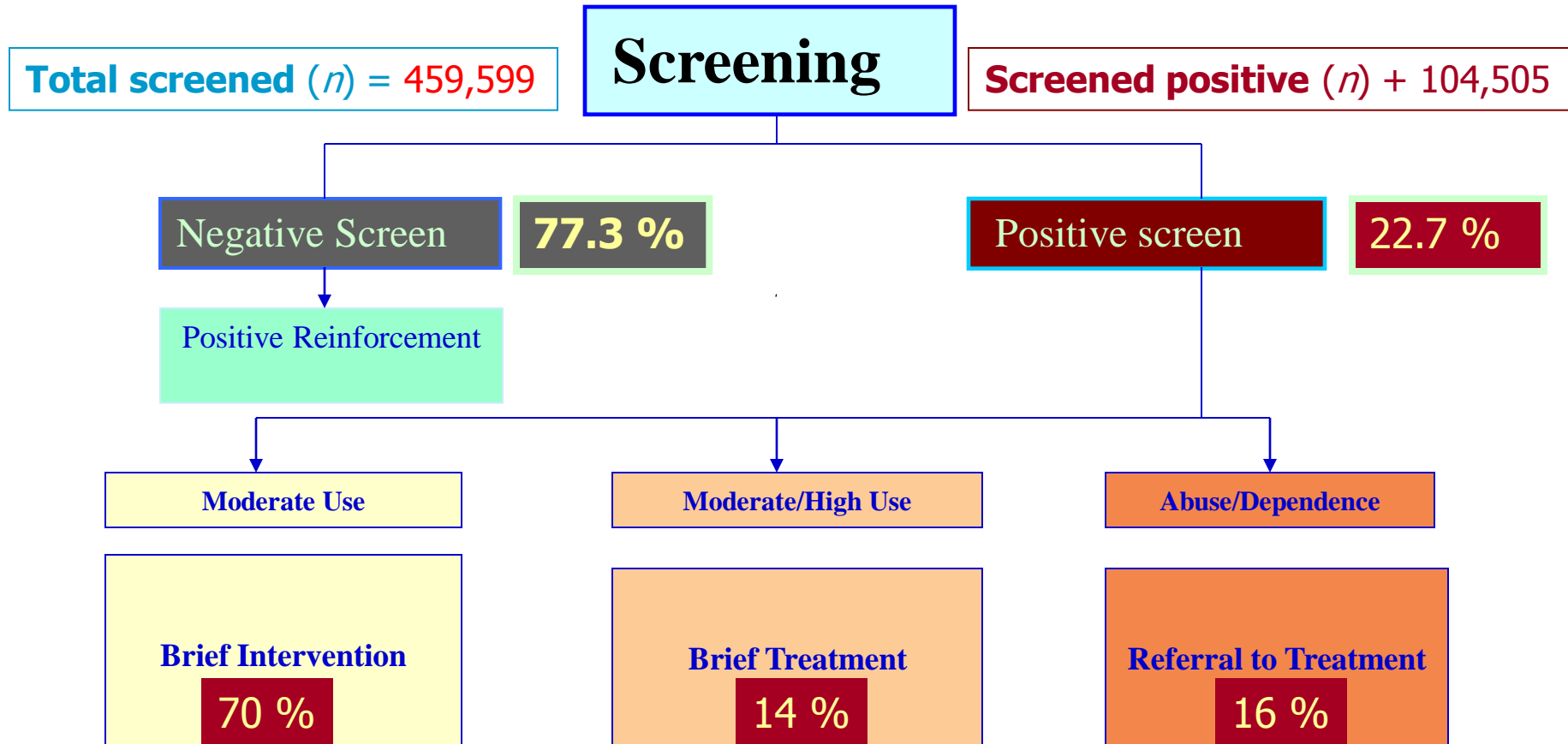
Screening (S)

Brief Intervention (BI)

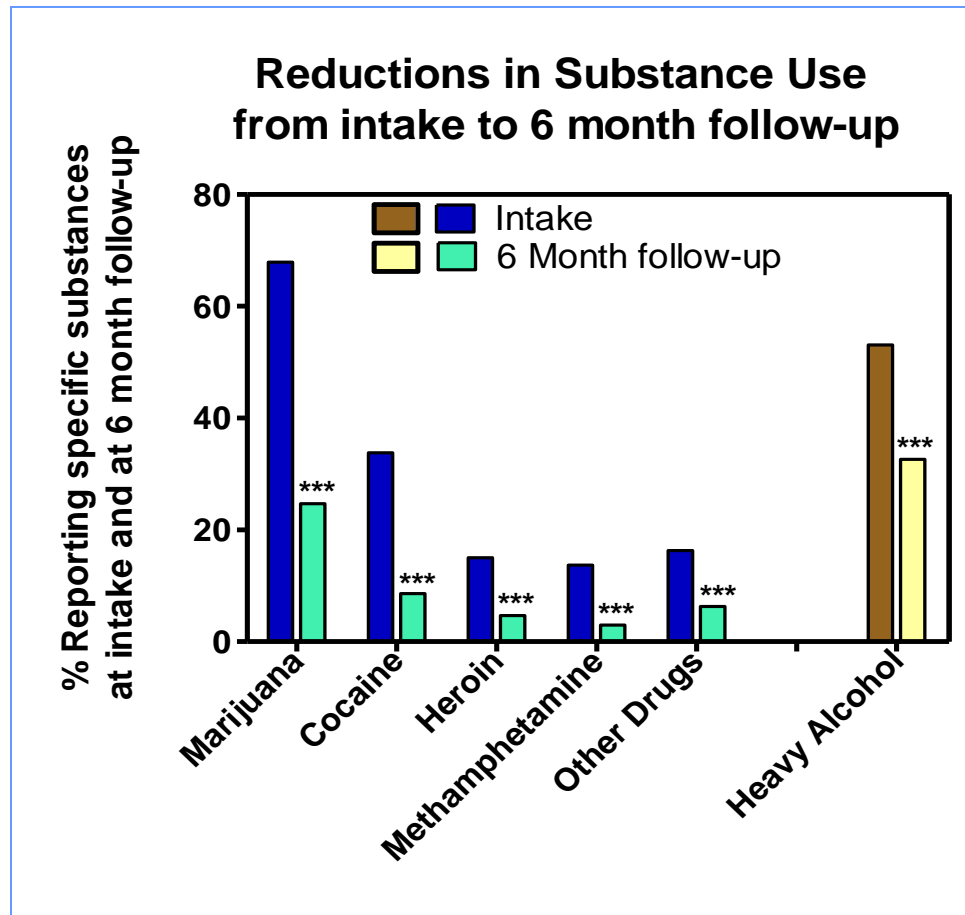
Brief Treatment (BT)

Referral to Treatment (RT)

SBIRT SCREENING RESULTS



Outcomes for positive screens in need of intervention?



Source: Madras et al. Drug and Alcohol Dependence 99: 280-295, 2009

Treatment Policy Solutions: Medicalize Intervention, Treatment Using Disease Model

Amenable to treatment research, design

Reduces marginalization by professionals

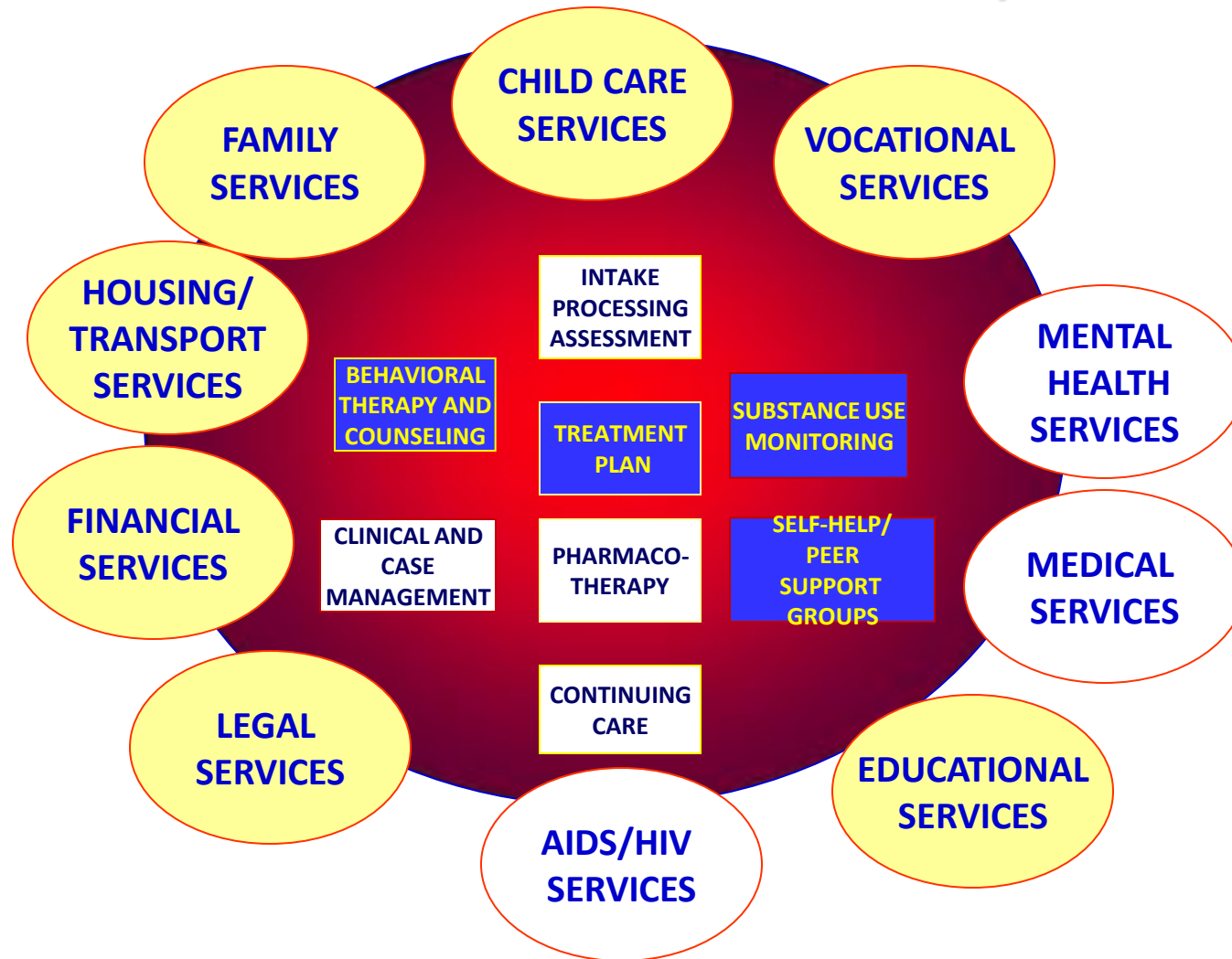
Facilitates support for research, medications development

**Eliminates moral weakness vs psychiatric disorder to focus on
treatment**

Blurs the mind-brain duality

Treatment Solutions: medicalize treatment and provide recovery support services

Effective Treatment Attends to Multiple Needs



Limitations of Science

Appeal to Emotions

Arthur Koestler

"I profoundly admire Aldous Huxley, both for his philosophy and uncompromising sincerity. But I disagree with his advocacy of 'the chemical opening of doors into the Other World', and with his belief that drugs can procure "a gratuitous grace".

Chemically induced hallucinations, delusions and raptures may be frightening or wonderfully gratifying; in either case they are in the nature of confidence tricks played on one's own nervous system."