

Access to Treatment for Addiction to Prescription Medications: Neuroscience, Clinical Practice, Goals and Barriers

3rd Annual Prescription Drug Abuse Symposium

Targeting Strategies to Curb the Epidemic in Indiana

Indianapolis, December 19, 2012

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I have no ties with commercial interests or conflicts of interest to report.

IATROGENIC: “Induced inadvertently by a physician or surgeon or by medical treatment or diagnostic procedures”

-Merriam-Webster Dictionary

1. **The Iatrogenic Opioid Epidemic:**

A problem created by the Healthcare System and Physicians that must be solved by the Healthcare System and Physicians.

2. **Opiate Addiction is a brain disease:**

Understanding the Neurobiology of this disease translates to treatment.

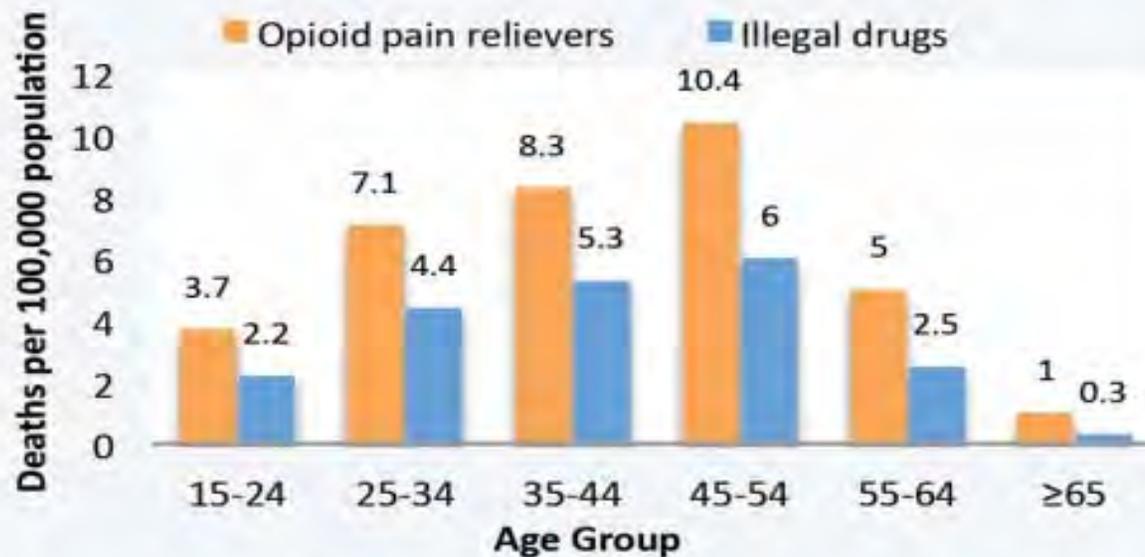
3. **Treatment of Opioid Addiction:**

Programs and professionals, tools and standards.

4. **Barriers to Treatment that must be solved:**

- lack of workforce and professional expertise;
- failures of public and private insurance coverage for treatment

Deaths from Opioid Pain Relievers Exceed Those from All Illegal Drugs



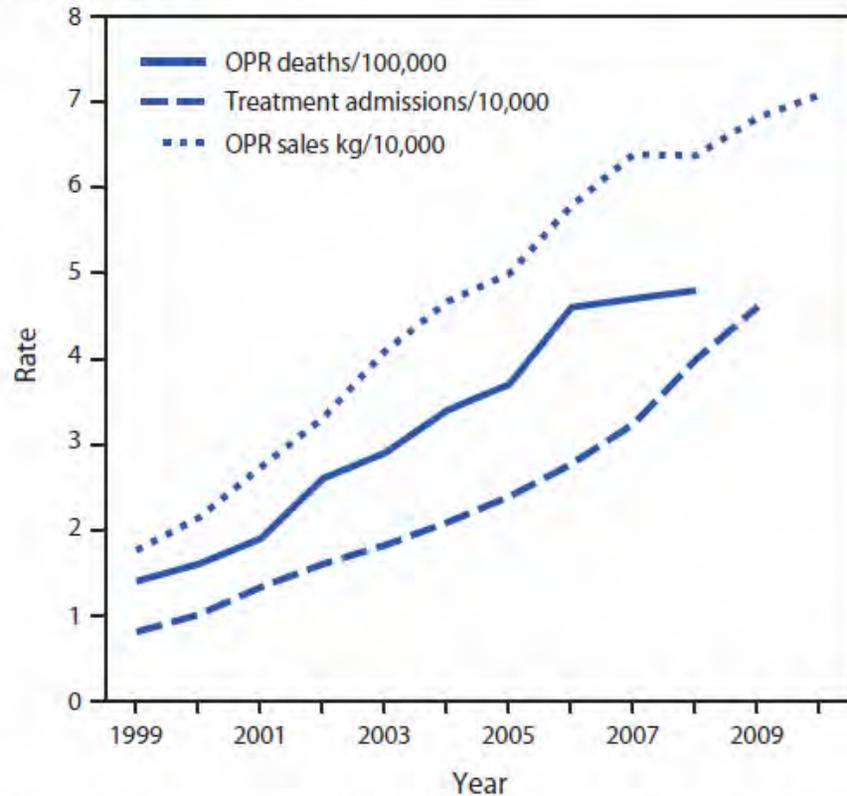
Source: CDC, Morbidity and Mortality Weekly Report, 60(43): 1489, 2011.

U.S. poisoning hospitalizations:

	<u>1999</u>	<u>2002</u>	<u>2004</u>	<u>2006</u>
Opioids (not methadone):	7,742	12,946	15,766	17,545
Heroin:	3,971	4,572	3,961	4,858

Coben et al. (2010) American Journal of Preventative Medicine

FIGURE 2. Rates* of opioid pain reliever (OPR) overdose death, OPR treatment admissions, and kilograms of OPR sold — United States, 1999–2010

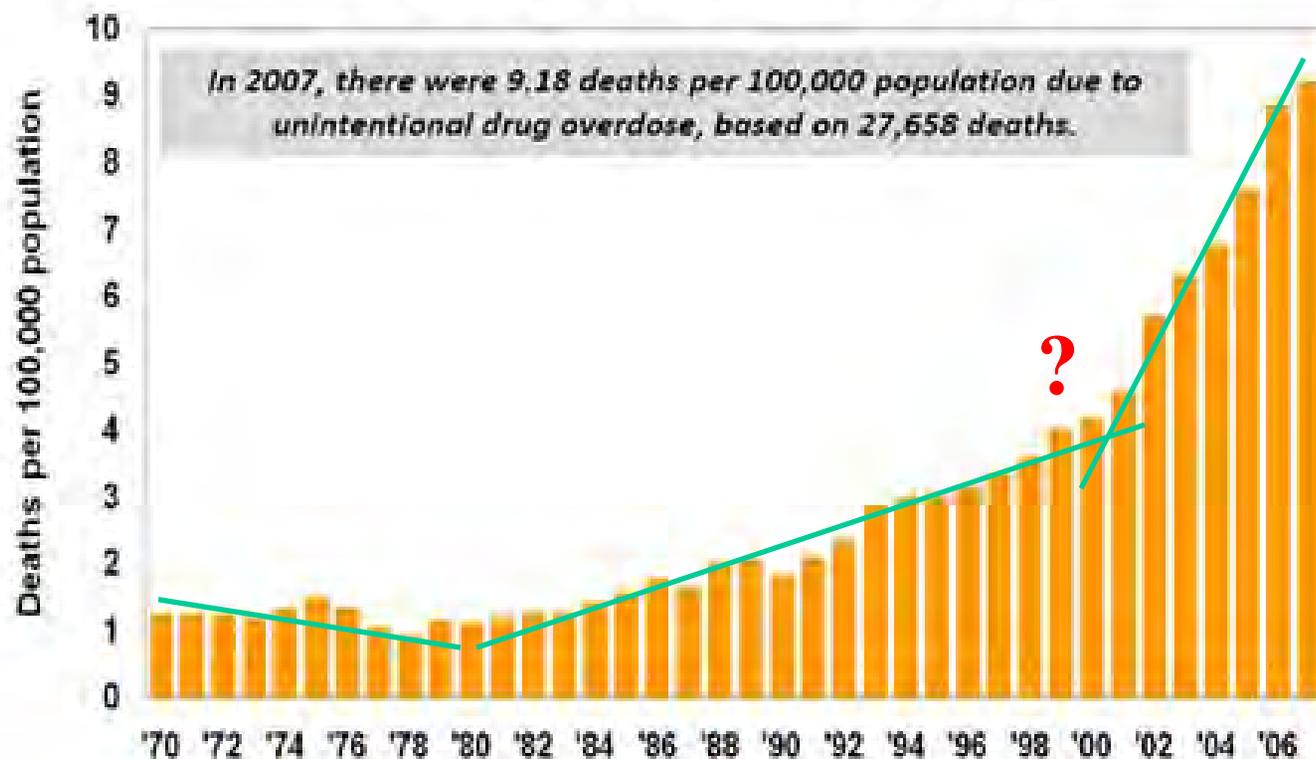


* Age-adjusted rates per 100,000 population for OPR deaths, crude rates per 10,000 population for OPR abuse treatment admissions, and crude rates per 10,000 population for kilograms of OPR sold.

-In 2010, narcotics were prescribed in the U.S. at levels equivalent to medicating every single adult with a 5 mg hydrocodone 6 x/day for a month.

-By 2008, an American adult is as likely to die from a prescription opioid overdose than either suicide or a motor vehicle accident.

Unintentional Drug Overdose Deaths United States, 1970-2007



Source: Centers for Disease Control and Prevention. *Unintentional Drug Poisoning in the United States* (July 2010).



Pain:
Current Understanding of
Assessment, Management,
and Treatments



This monograph was developed by NPC as part of a collaborative project with JCAHO.

December 2001

The JCAHO, pain initiative: Pain as the 5th vital sign

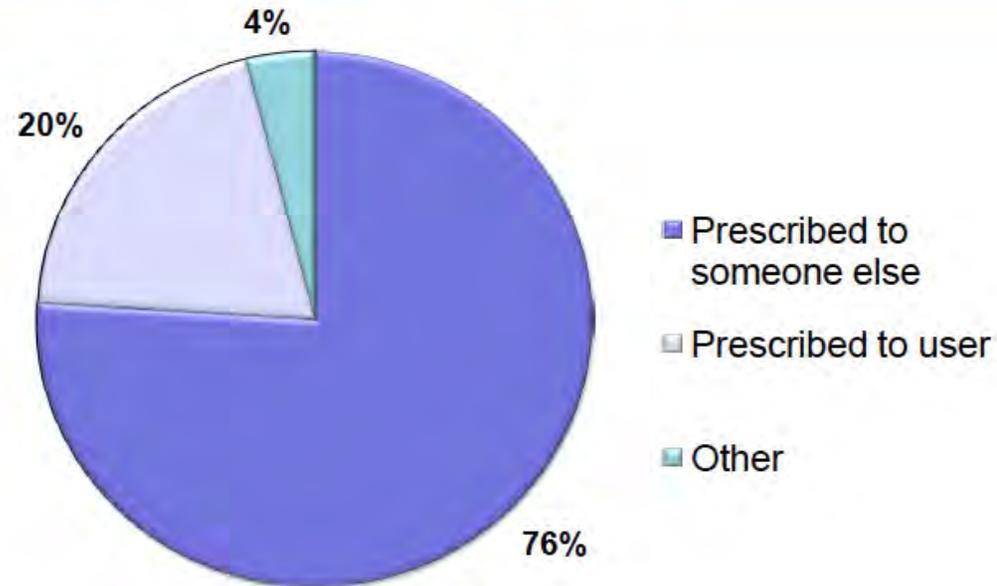
Purdue Pharma

Industry leader in the manufacture and sales of opioid analgesics (e.g. MS Contin, Oxycontin (oxycodone), Tramadol, Dilaudid (hydromorphone), etc.

In 2007, Purdue pleaded guilty to criminal and civil charges in misleading the public about oxycontin's Addiction risk, agreed to pay \$600,000, 000 in one of the largest pharmaceutical settlements in U.S. history.

In 2010, Purdue Pharma's sales of Oxycontin alone topped \$3 Billion! (this is 3x bigger than the annual budget of NIDA!!)

Opioid Analgesics: Sources for Nonmedical Users United States, 2009



National Survey on Drug Use and Health. Summary of national findings, 2008-2009
<http://www.oas.samhsa.gov>

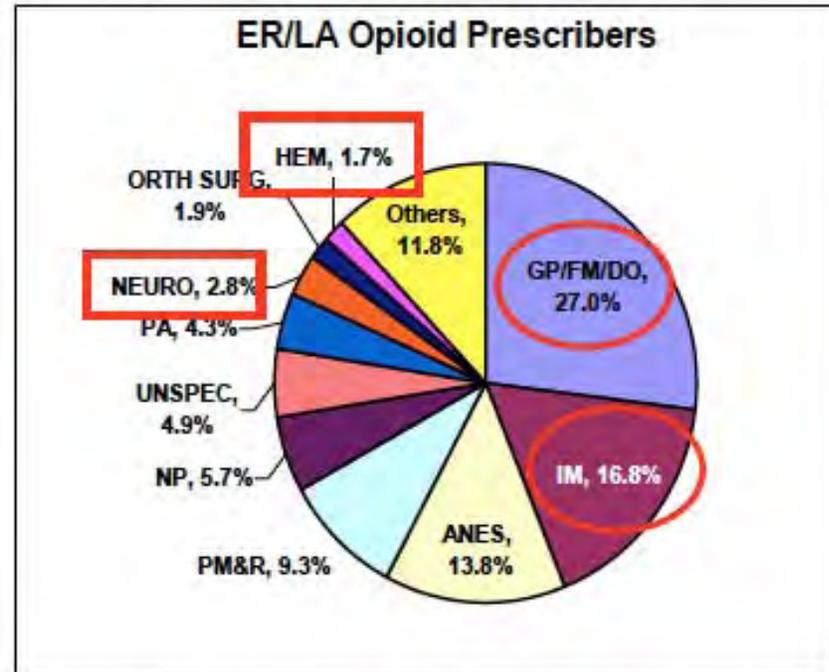
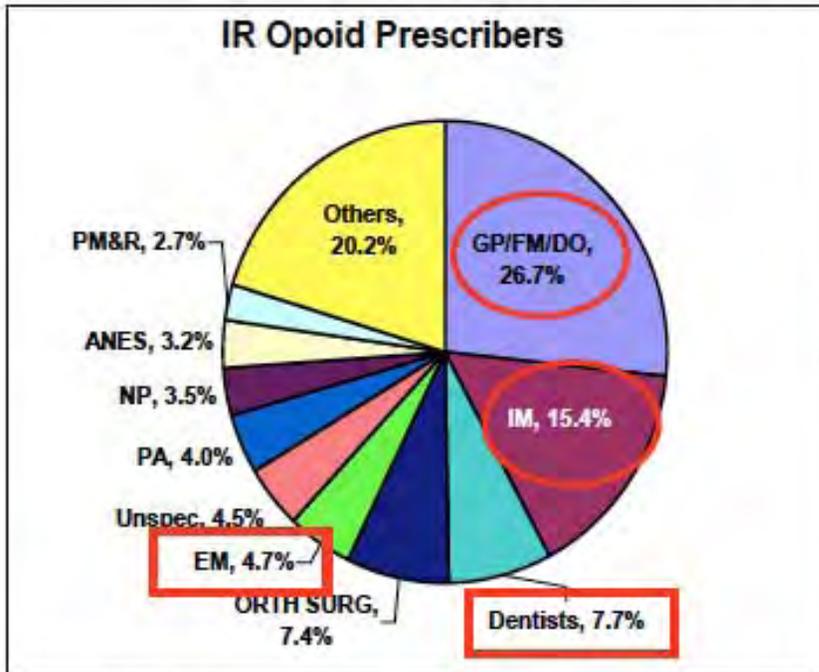


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See Inciardi et al Pain Medicine, 2009

Total number of prescriptions dispensed in the U.S. by top 10 prescribing specialties for IR and ER/LA opioids, Year 2009

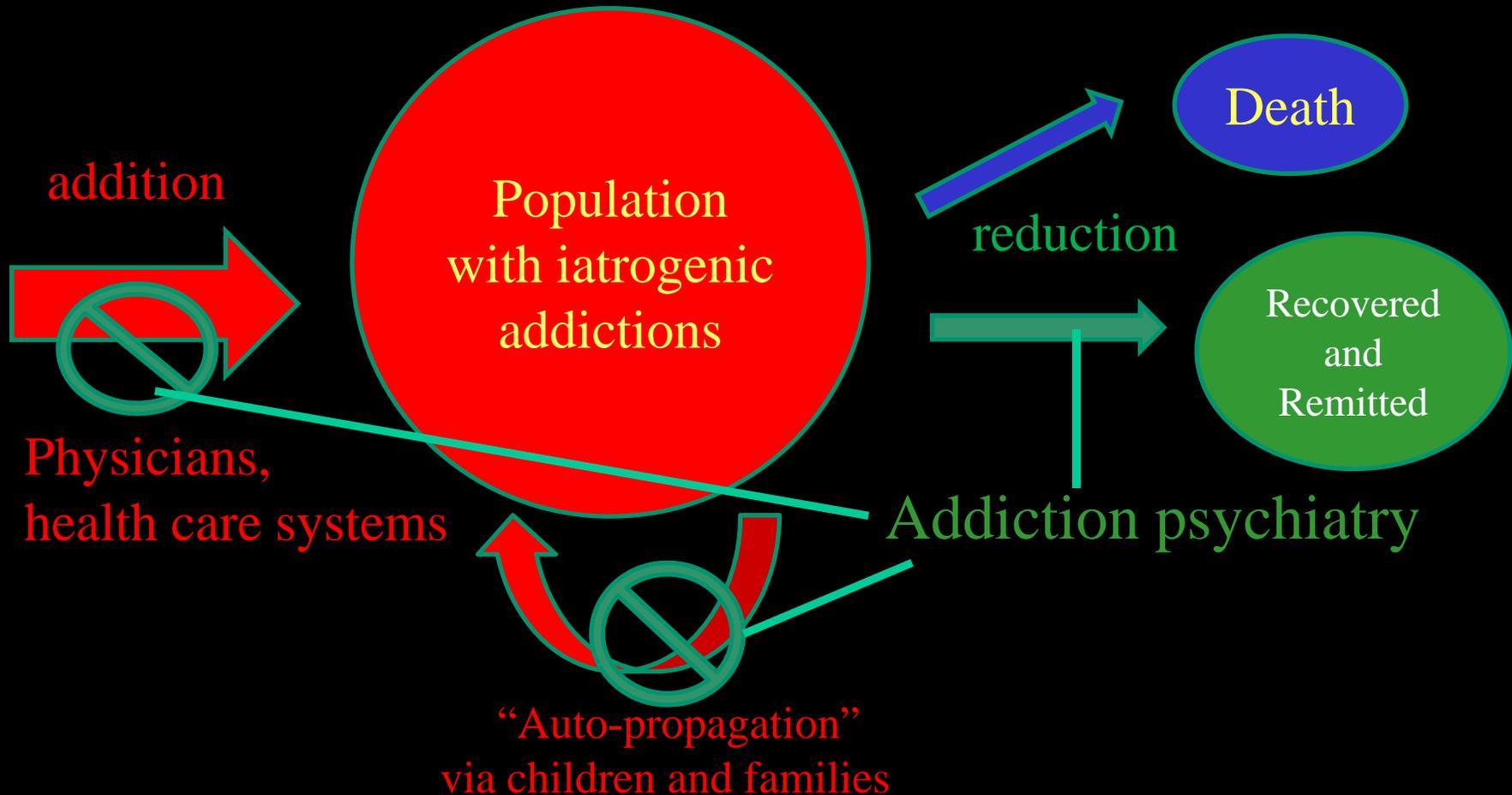
SDI: Vector One®: National. Extracted June 2010.



- GP/FM/DO, and IM were top 2 prescribers for IR and ER/LA opioids
- IR opioid prescribers:
- Dentists and EM specialists accounted for about 18 million and 11 million IR dispensed prescriptions

What are we going to do about it?

Understand it, Prevent it, Treat it



2. Opiate Addiction is a brain disease:

Understanding the Neurobiology of this disease translates to prevention and treatment.

Substance Dependence

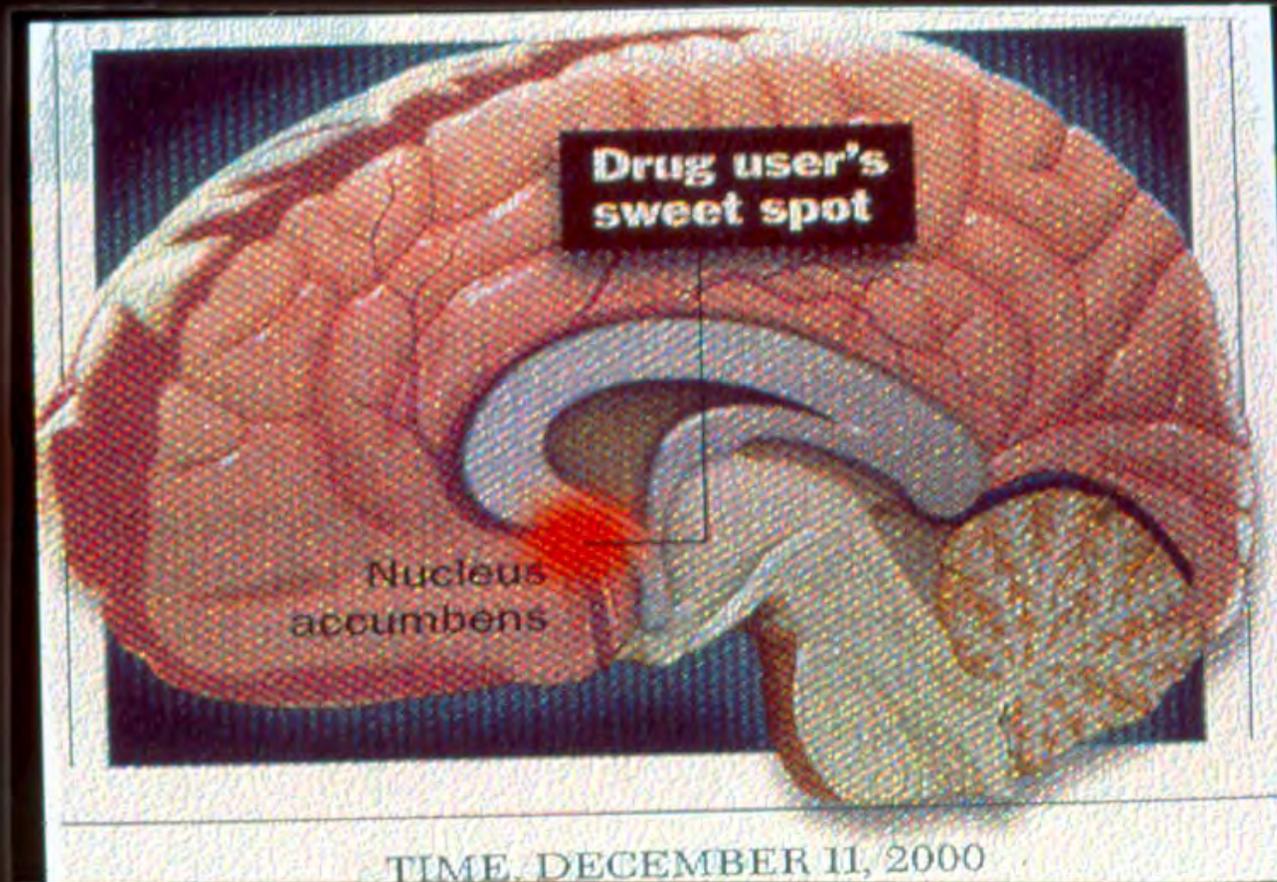
Maladaptive pattern leading to clinically significant impairment or distress within a year including three or more of:

1. Tolerance
2. Withdrawal signs
3. Substance taken in larger amounts/longer period of time than intended
4. Persistent desire/unsuccessful efforts to quit/cut back
5. Great time spent acquiring or using substance
6. Social, occupational, recreational activities reduced or eliminated because of use
7. Use continues despite knowledge of medical or psychiatric problem resulting from use

Motivational
Injury

Nicotine, alcohol, cannabis, cocaine, amphetamine, opiates

Common Drug Actions on Neurobiological Substrates of Addiction



Neurobiological Effects of Addictive Drugs

Cocaine

DA, 5HT, NE transporters

prefrontal cortex, striatum

DA

Nucleus Accumbens

Amphetamine

“

”

Nicotine

Acetylcholine receptors

thalamus, striatum, frontal, parietal cortex

DA

Nucleus Accumbens

Cannabis

Cannabinoid receptors

Cingulate, pallidum, hippocampus, cerebellum

DA

Nucleus Accumbens

Opiates

Mu and Kappa receptors

Neocortex, thalamus, striatum, cerebellum, PAG

DA

Nucleus Accumbens

Alcohol

GABA and NMDA receptors

Everywhere!

DA

Nucleus Accumbens

Opiates

Use of opiates for *acute* pain is one of the major miracles of modern medicine.

Heroin \$50-200 K /kg
30-70% pure

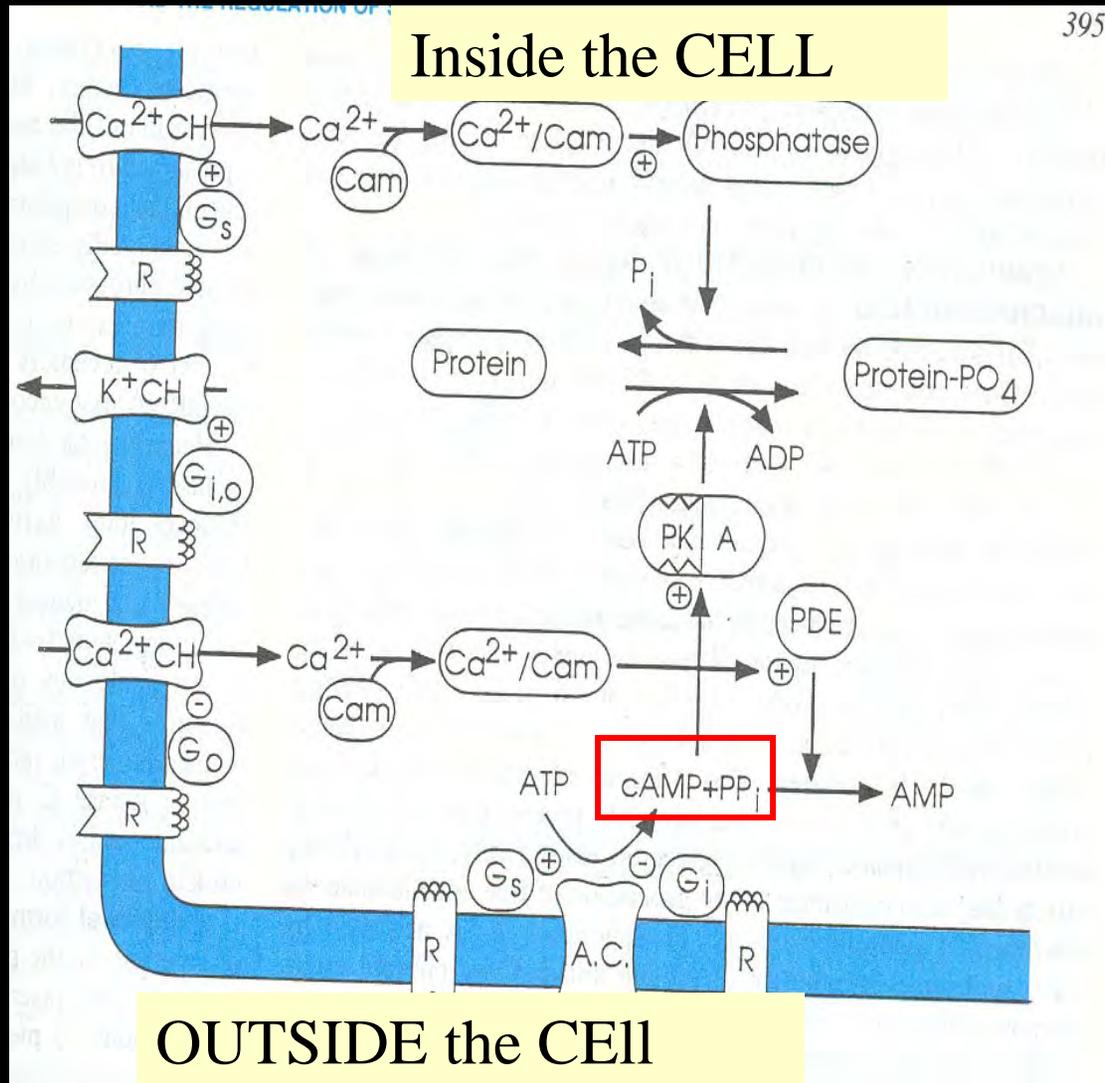
Oxycontin:

	<u>Rx</u>	<u>Street</u>
10 mg	\$1.25	\$5-10
80 mg	\$6.00	\$65



Methadone
Fentanyl
Heroin
oxycodone
hydrocodone

Neurobiology of Opioid Addiction: The Molecular Story



Hormone and Autocoid signaling:

i.e. immunology, Gastrointestinal, and hormonal systems

Platelet activating factor, substance P, leukotrienes

Vasoactive Intestinal peptide, Somatostatin, cholecystokinin

Glucagon, FSH, LH, PTH, TRH

Cholera, pertussis, anthrax, pseudohypoparathyroidism, diabetes, cardiomyopathies

From Harrisons, 12 ed. 1991

Looking for G protein action the Nucleus Accumbens....

0022-3565/96/2761-0306\$03.00/0

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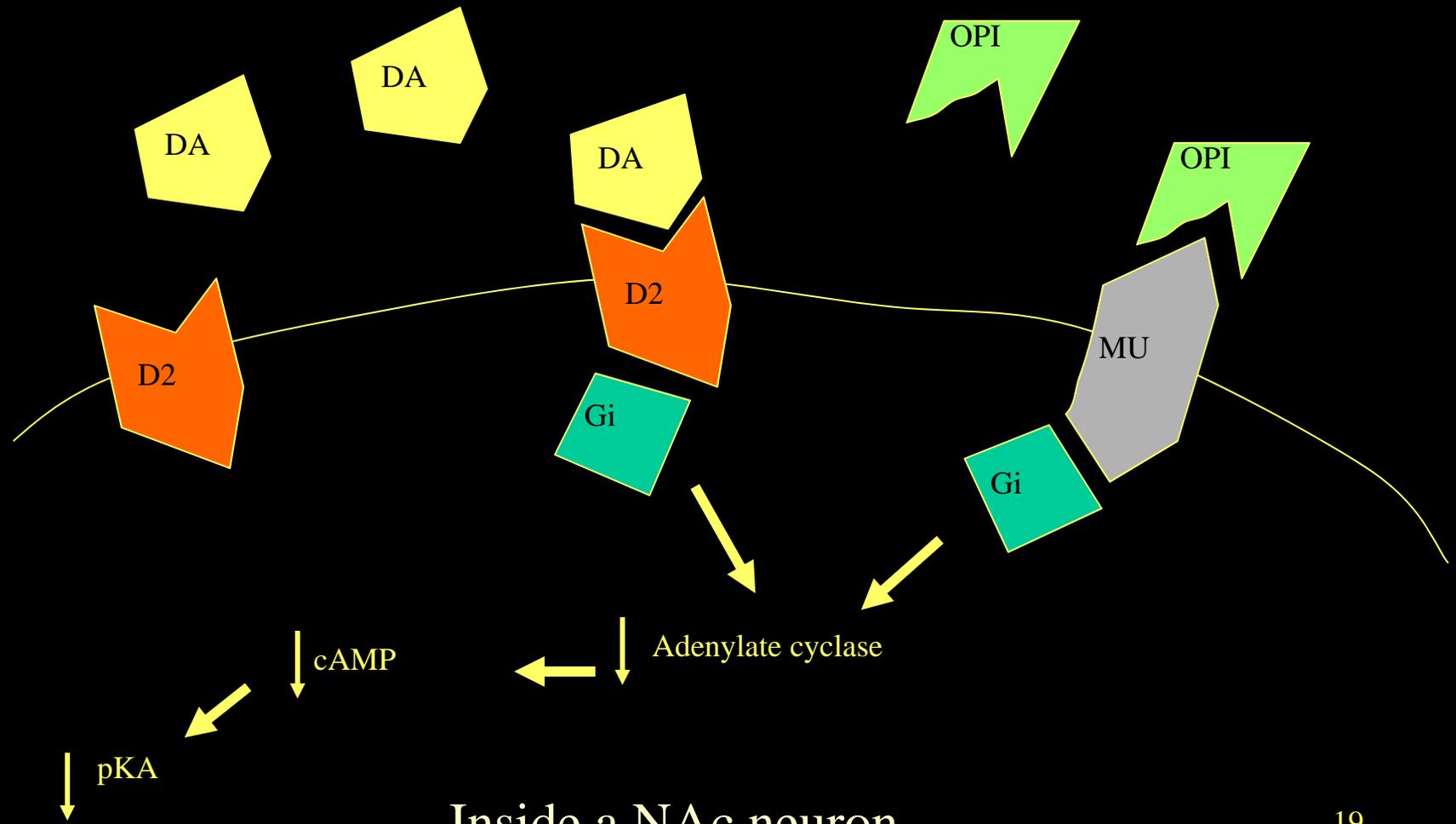
Regulation of CREB Expression: *In Vivo* Evidence for a Functional Role in Morphine Action in the Nucleus Accumbens¹

KATHERINE L. WIDNELL, DAVID W. SELF, SARAH B. LANE, DAVID S. RUSSELL, VIDITA A. VAIDYA,
MINDY J. D. MISERENDINO, CHARLES S. RUBIN, RONALD S. DUMAN and ERIC J. NESTLER

Laboratory of Molecular Psychiatry, Departments of Psychiatry (D.W.S., S.B.L., D.S.R., V.A.V., M.J.D.M., R.S.D., E.J.N.), Pharmacology (K.L.W., R.S.D., E.J.N.) and Neurology (D.S.R.), Yale University School of Medicine and Connecticut Mental Health Center, New Haven, Connecticut, and Department of Molecular Pharmacology (C.S.R.), Albert Einstein College of Medicine, Bronx, New York

Accepted for publication September 5, 1995

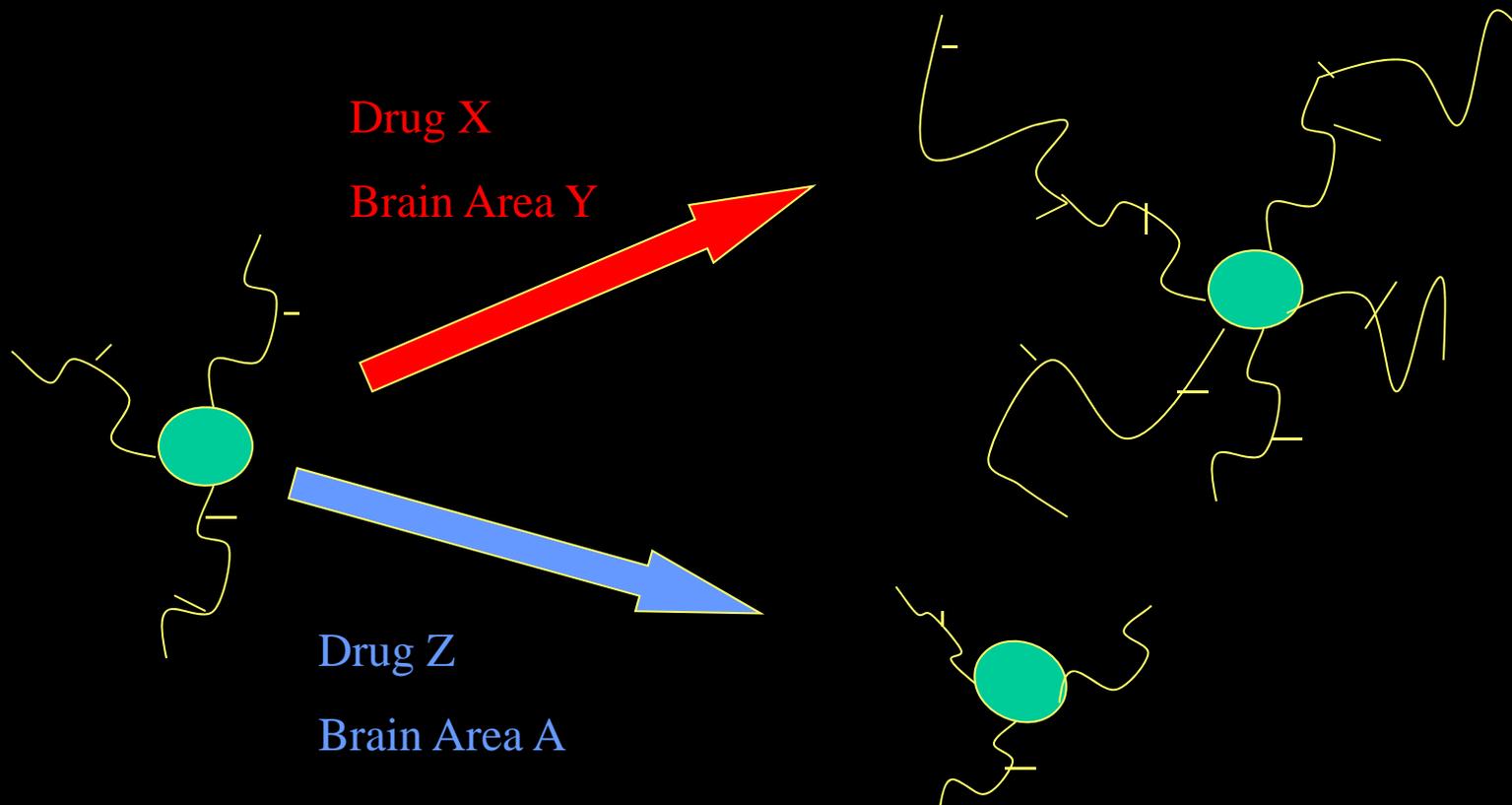
Acute DA discharge has intracellular effects in the NAc



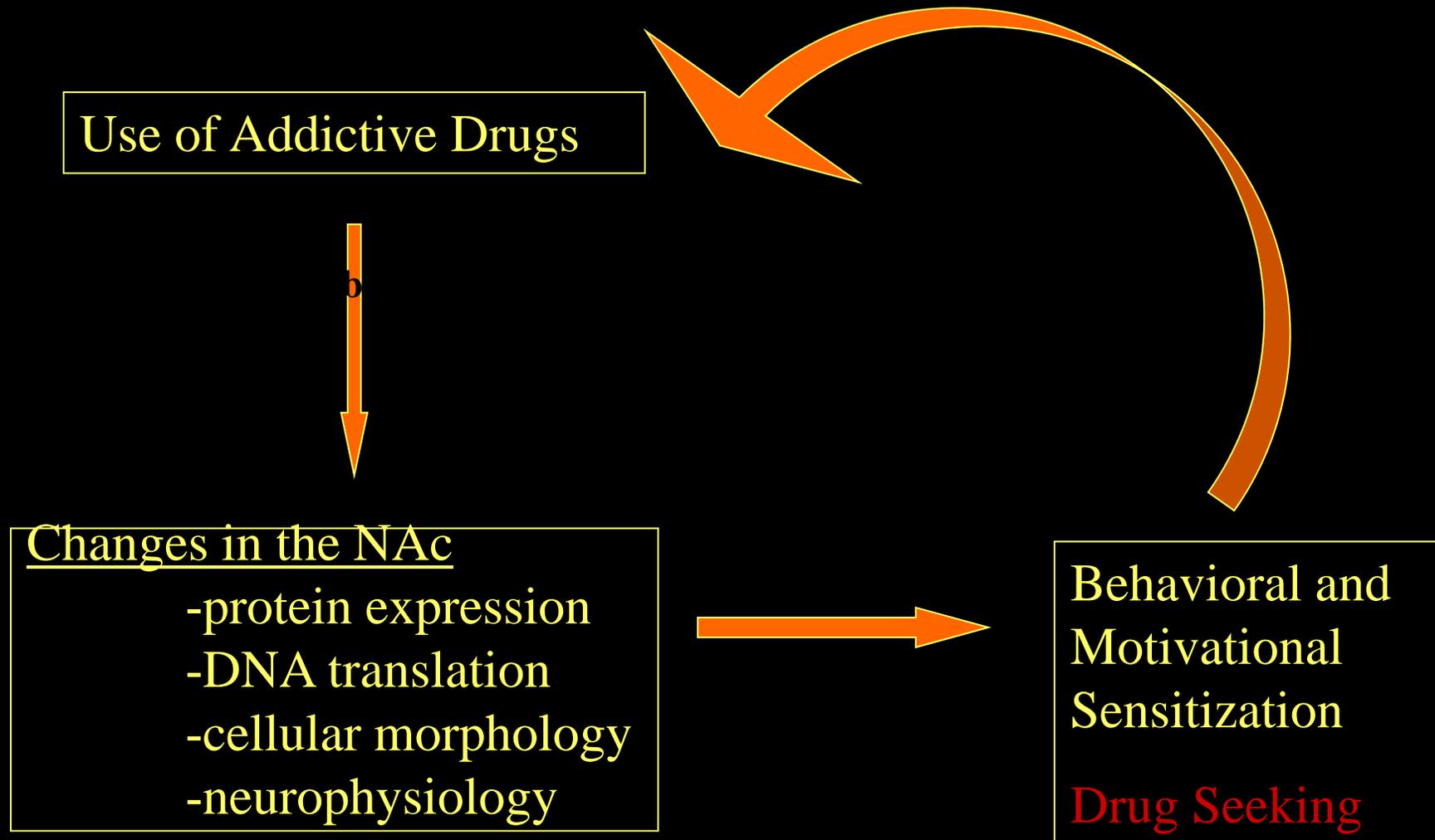
Inside a NAc neuron

What exactly are these changes in neuronal architecture....

Changes in Neuronal Branching and synaptic spines in key circuits implicated in motivational control (NAC) and decision making (PFC).



The Vicious Cycle of SUDs



(Nestler, 2001; Robinson, 2001; Thomas, 2001)

Opioid Addiction and Dual Diagnosis

What are the top two Vulnerability Risk Factor for Addictions and how we understand these vulnerabilities neuroscientifically?

1. Presence of Mental illness

(Chambers et al, Biol Psy, 2001)

2. Adolescent Neurodevelopment

(Chambers et al, Am J Psy, 2003)

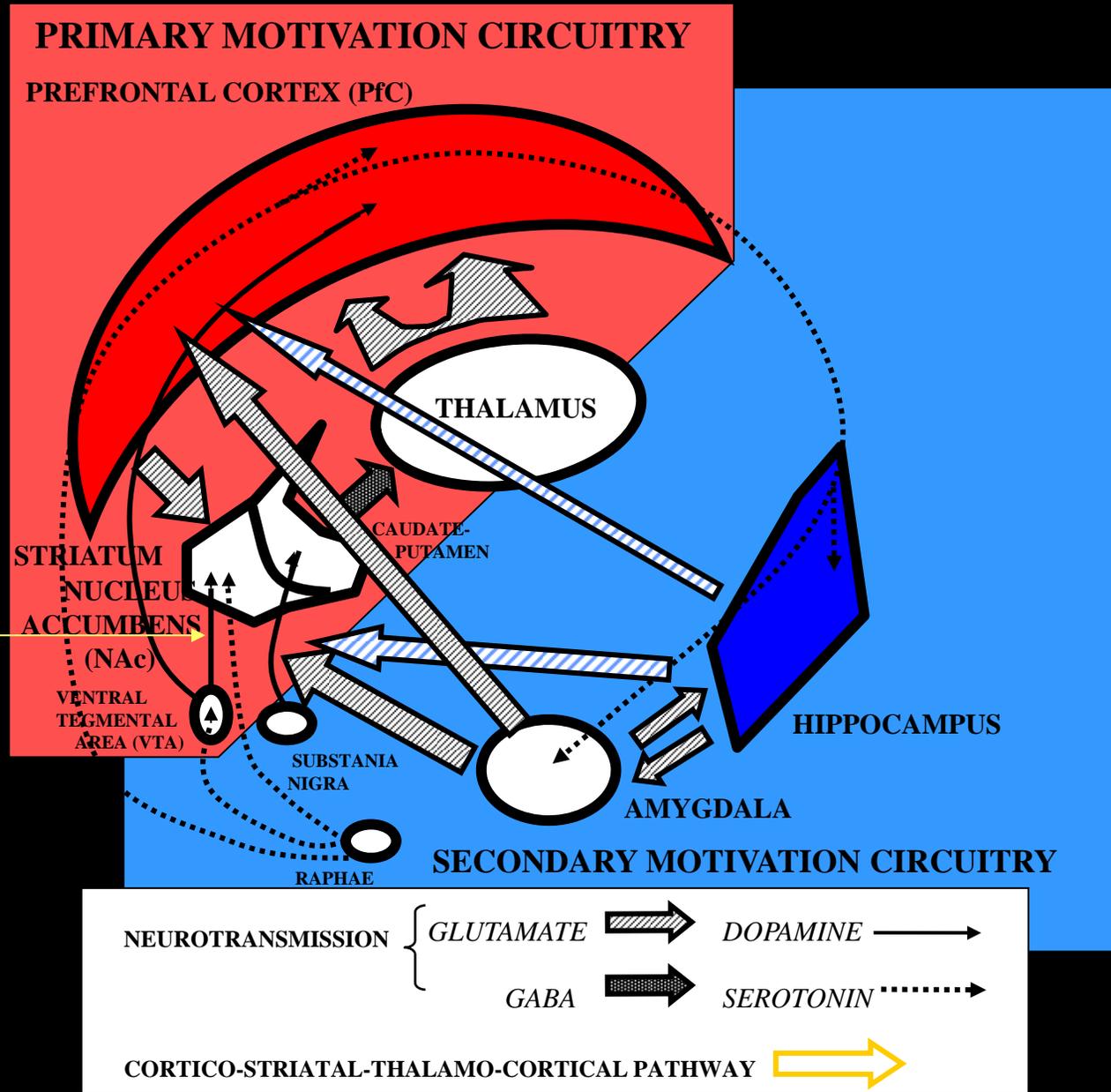
Risk Factors for drug dependence among out-patients on opioid therapy in a large US health care system

Boscarino, et al. *Addiction*, 2010

- A large U.S. outpatient population receiving chronic opiates for non-cancer pain indications; receiving opiate prescriptions from 4+ docs within a year
- 26% of this population met criteria consistent with dx of opiate dependence
- Top Risk factors for having opiate dependence:
 - Younger Age
 - Presence of mental illness (or psychotropic meds)
 - History of Substance Abuse
 - Increasing degree of pain-impairment

Motivational Neurocircuitry is Broadly Distributed

- Novelty
- Sex
- Food
- Nicotine
- Alcohol
- Cannabis
- Cocaine
- Amphetamine
- opiates



3. Treatment of Opioid Addiction:
Programs and professionals, tools and standards: the 2 x 4 model.

Treatments Systems for Addiction

1. Requires a multidisciplinary team.

(MDs, Nursing, Masters level therapists, etc)

2. Multidisciplinary professional team must be trained and qualified to diagnose and treat co-occurring addictions and mental disorders.

3. Infrastructure/Treatment Culture

-Individual and group therapy space

-Extended hours

-Urine drug testing

-Access to some form of supervised detox setting

Treatments for Opiate Addiction

Preparation-Detoxification/Withdrawal Treatment:

Goal: initiate and ease transition into long term care.

- Individual Psychotherapy
- Therapeutic residence preferred but rare
- Clonidine or opioid agonist tapers

Abstinence-Oriented:

Goal: Achieve total recovery (CURE!).

- Individual and group Psychotherapy (e.g. Motivational Enhancement)
- Medication: Naltrexone (oral or IM depot)

Opiate Replacement:

Goals: Clinically stabilize to prepare for or initiate Abstinence oriented and/or as a means of permanent harm reduction.

- Individual and Group psychotherapy
- Methadone
- Buprenorphine (Suboxone)

4. Barriers to Treatment that must be solved:

- lack of workforce and professional expertise;
- failures of public and private insurance coverage for treatment

United States

Substance Disorders collectively represent the leading cause of Illness and premature death in the U.S. (Mokdad et al. , JAMA, 2004)

Indiana

2 Largest medical School in U.S.

5 Ranking in nation of adults with nicotine addiction

(behind Kentucky, Alaska, South Dakota, West Virginia; (2002 data; MMWR, CDC)

#4 Ranking number of per capita methamphetamine labs discovered

(behind Iowa, Arkansas, North Dakota;2004 data; National Clandestine Laboratory Database)

#1 Ranking in Child Abuse Fatalities

#1 Ranking in preventable deaths in Children <1 years.

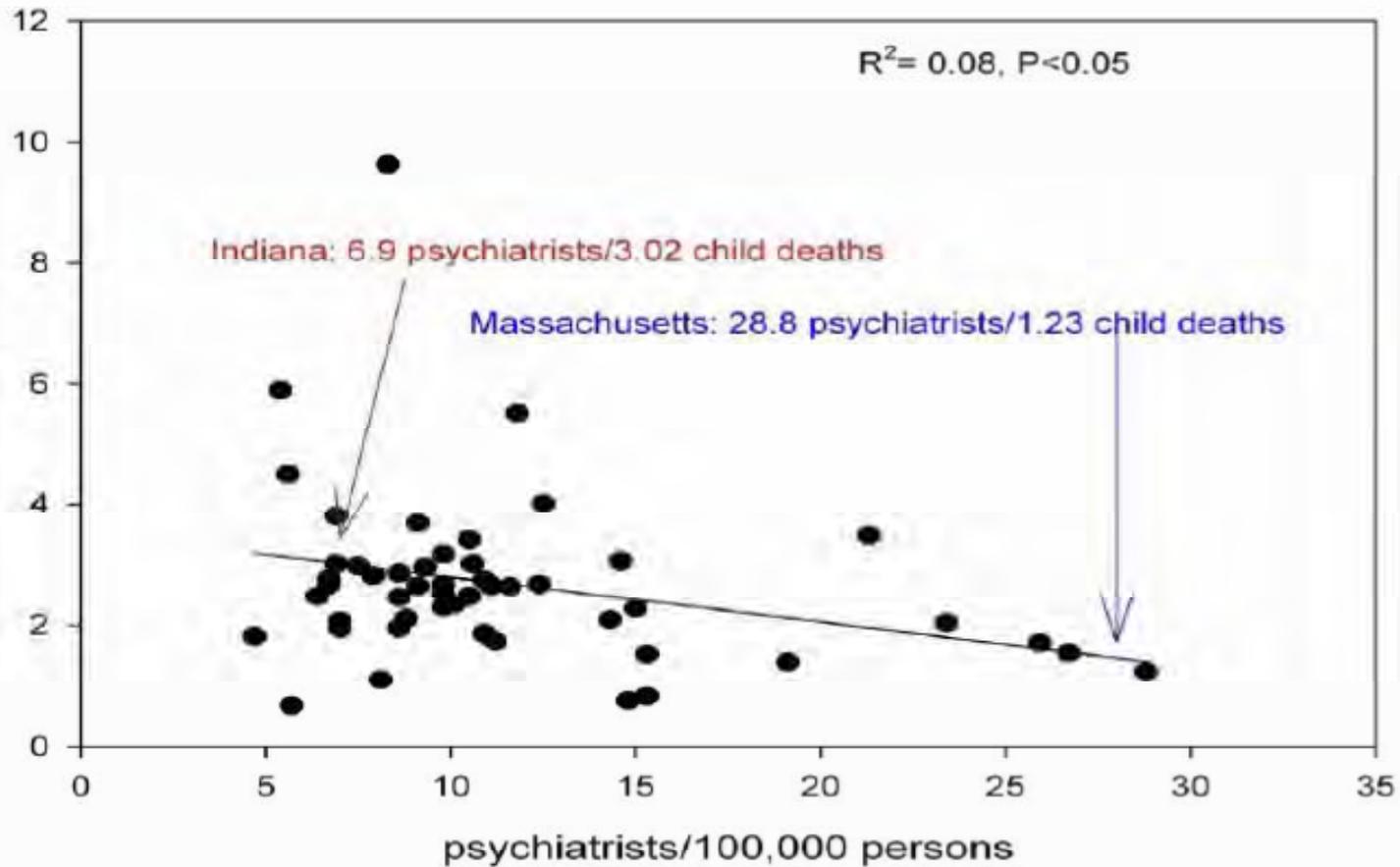
#3 Ranking in preventable deaths in Children 0-4 years.

(2005 data; CDC; www.cdc.gov/ncipc/wisqars; Majority of deaths caused by parents many with under or ineffectively treated substance/ mental disorders)

Indiana Exceeds National Averages in rates of prescription opioid sales, non-medical use, and lethal overdoses of opioids (CDC, 2011)

7 ranking in lowest number of per-capita Psychiatrists in the U.S.; we produce only 6 psychiatrist/year and 0.5 addiction psychiatrists/year. (USDHHS, HRSA, State Health Workforce profiles (2000))

Intentional Violent Death of Children ages (0-15)
Per 100,000 children/ state 2004



USDHHS, HRSA, State Health Workforce profiles (2000)
Early Child mortality CDC (2004)

Psychiatric and Behavioral Health workforce Shortages in Indiana

-40% of Indiana (37 /92 counties) was designated as a Mental Health professions shortage area in 2009 (Indiana State Department of health/ UDDHHS criteria).

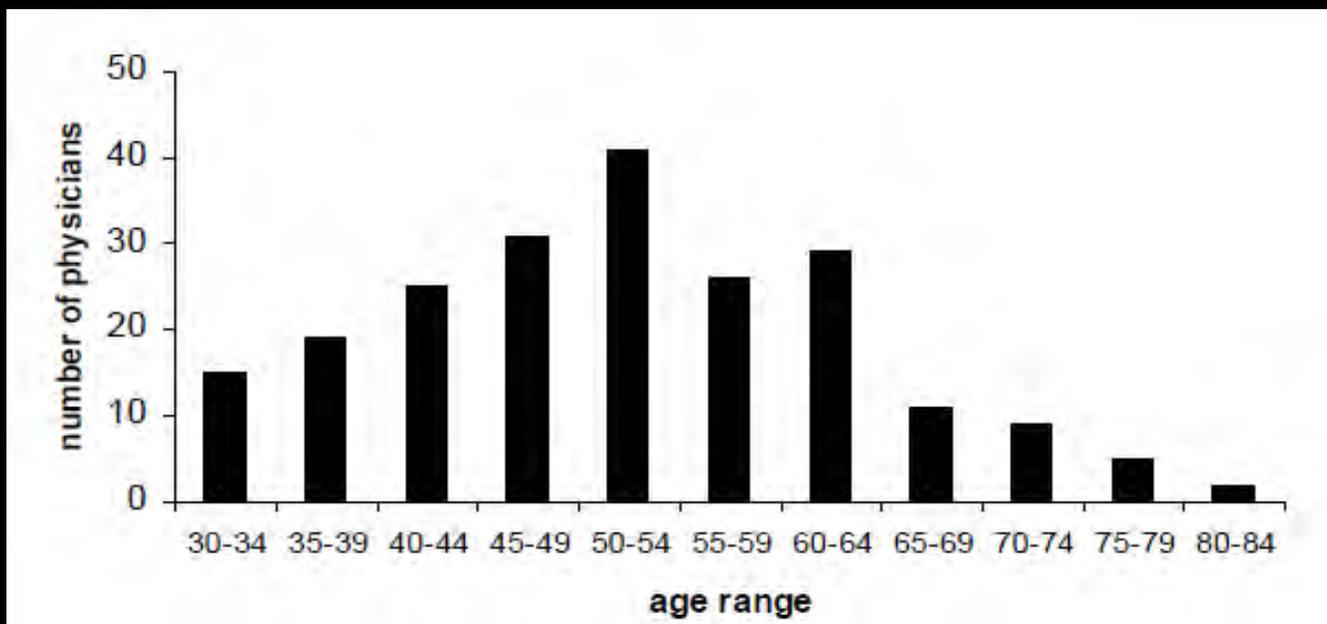
-The average age of psychiatrists in Indiana is 52.6.

-More than 2/3 of Indiana's psychiatrists were not trained in Indiana.

-50 counties in Indiana have no psychiatrists practicing within them.

(Indiana Center for workforce Studies, 2010 Indiana Mental Health Professionals RE-licensure Survey Report, 2012)

Age brackets of Indiana's behavioral health docs



Extreme Shortages of Addiction Psychiatrists superimposed on critical shortages of General Psychiatrists

Nationwide: less than 1% of all psychiatry residents seek further sub-specialty Training in addiction psychiatry.

Total Number of fully trained and ABMS-certified Addiction Psychiatrists Produced in the History of the IU School of Medicine:

4

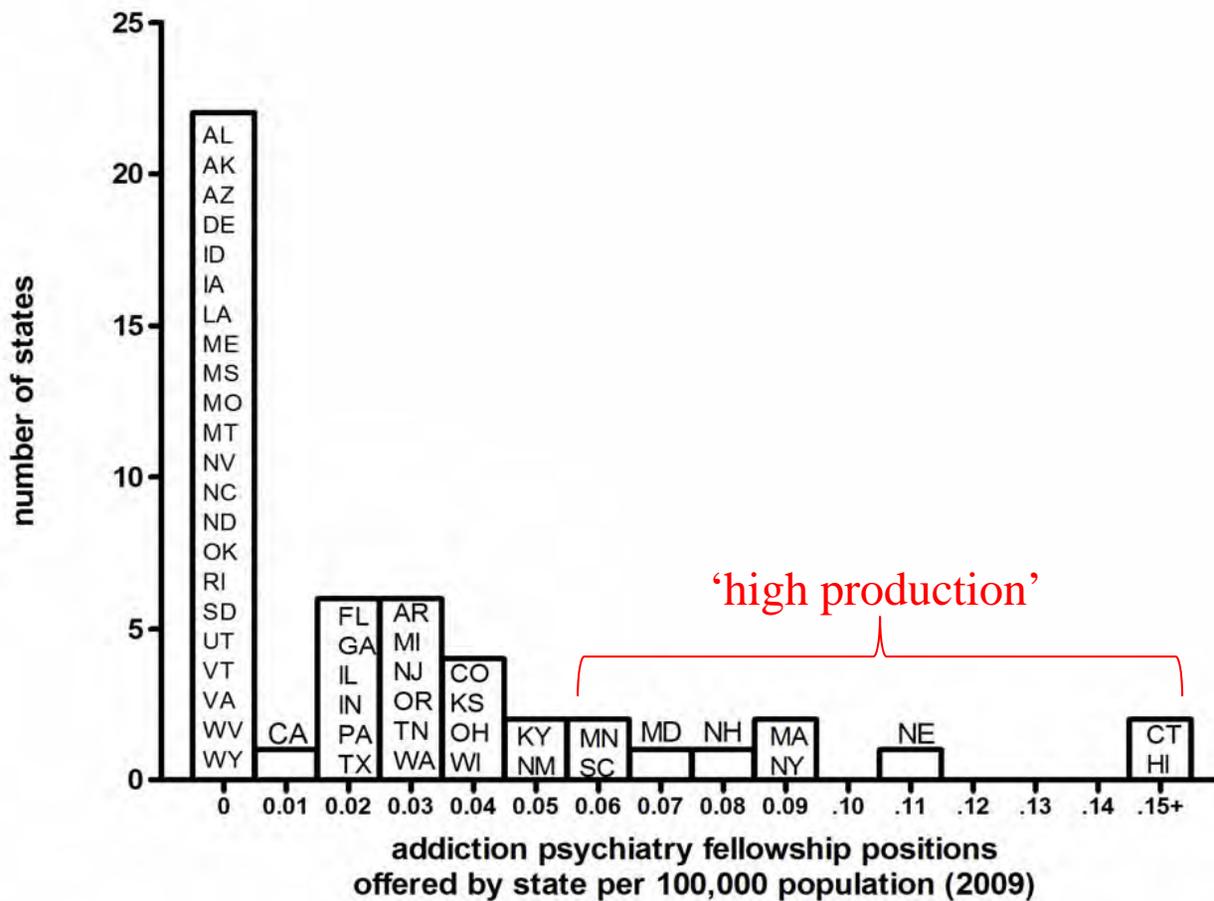
Total number of Anesthesiologists produced per year at IU: 28.

Total Number of Diagnostic Radiologists produces per year at IU: 15

Total Number of Internal medicine docs produced per year at IU: 40

Addiction Psychiatry Fellowship positions in U.S. by State per Capita

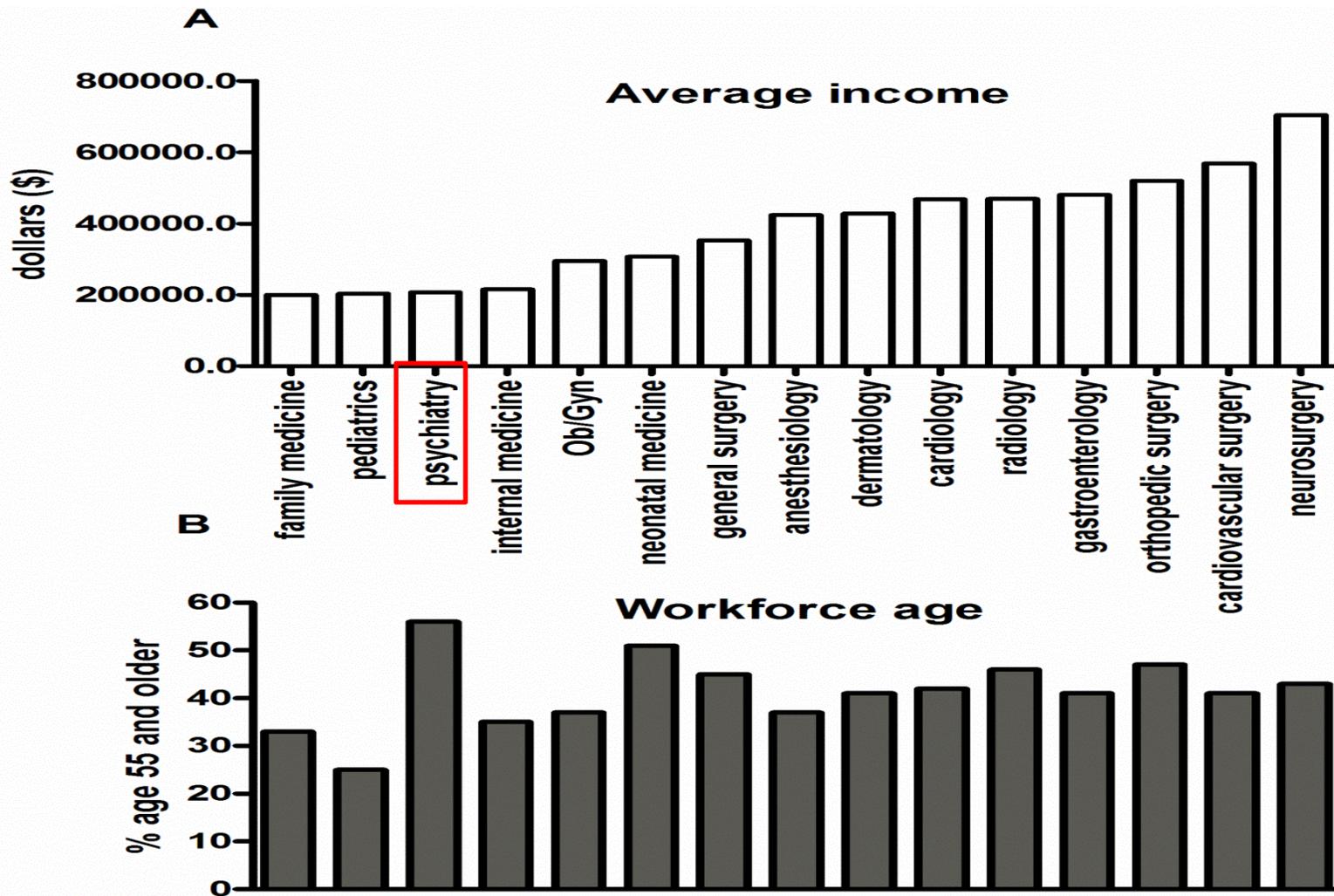
Figure 1



Why is Psychiatry , Behavioral Health and
Psychiatric Addctionolgy in particular in danger of
extinction

....When the Clinical Need is so vast and so central
to the Public Health of the United States?

Psychiatry: the most unfavorable income to workforce age ratio of all medical specialties



What does the most ‘unfavorable income to workforce age ratio’ signify for psychiatry in the face of high clinical demand?

-Collapsing workforce due in part to lack of reimbursement compared to other medical specialties. *But this is not about Greedy medical students!*

-Explosion of Medical Student loan burdens (Jolly, 2005):

Median Medical student loan debt:

	<u>private</u>	<u>public</u>
1985	\$22,000	\$27,000
2003	\$100,000	\$135,000
Now	(undergrad + MD) \$200,000- \$250,000	

-Unlike other medical specialties, psychiatrists who go on to pursue subspecialty fellowship training in Addictionology have no financial incentive to do so (e.g. sacrifice another \$100,000 income to do the fellowship with no clear increase in income afterward).

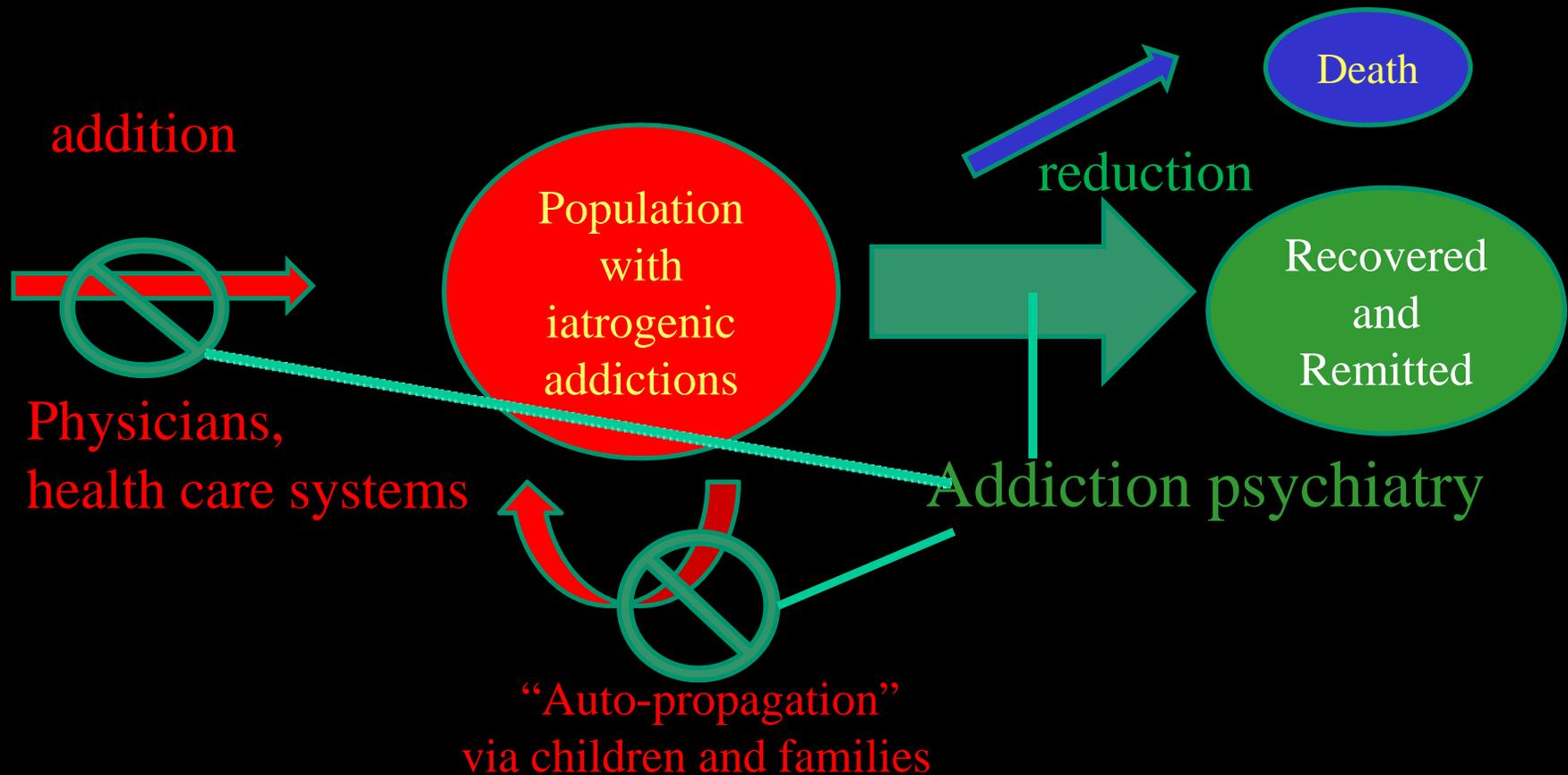
-Failure of public and private insurance to support or recognize the expertise or services that Addiction psychiatrists provide.

Public and Private Health Insurance Policies in Indiana :

1. Promote and financially incentivize iatrogenic Addictions, inadvertently supporting lucrative reimbursements for procedures and medical hospitalizations that result from un- or inadequately treated addictions.
2. Deter against or inadequately fund even minimal levels of evidence based treatments for addiction, that cost only a fraction of what the medical (and legal) consequences of what untreated addictions will eventually incur.

IATROGENIC Addiction Epidemic

Understand it, Prevent it, Treat it



Necessary ACTIONS NEEDED NOW:

1. Medical School Educational Loan Repayment Programs
for Psychiatry Residents who pursue fellowships in Addiction Psychiatry and stay and practice in Indiana for 4- 5 years after graduation. (4- 5year plans \$20,000/year dedicated loan repayment).
2. Achieve Full Insurance Coverage Parity for Addiction Treatments
 - including all evidence based treatments (and FDA approved medications).
 - fund supervised detoxification facilities.
 - eliminate insurance barriers; specifically support collaborative treatment expertise of addiction psychiatrists
3. Phase in physician and dual diagnosis expertise requirements for Addiction treatment programs and medication privileging:
 - inpatient and outpatient systems must be staffed by board certified/fellowship trained Addiction psychiatrists (or ABAM diplomates);
 - stand alone addiction treatment facilities that only treat one type of addiction or are not capable in house of treating co-occurring mental disorders terminated.

Thanks.
Questions? Discussion? Debate?



Lab for Translational Neuroscience
of
Dual Diagnosis & Development

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Comorbidity in Mental Illness and Adolescent neurodevelopment:
contact: robchamb@iupui.edu