

# ***What Science tells us about addiction***

**Timothy P. Condon, Ph.D.  
Chief Science Advisor, TASC  
Research Professor**

**Center on Alcoholism, Substance Abuse and Addictions University  
of New Mexico at Albuquerque**

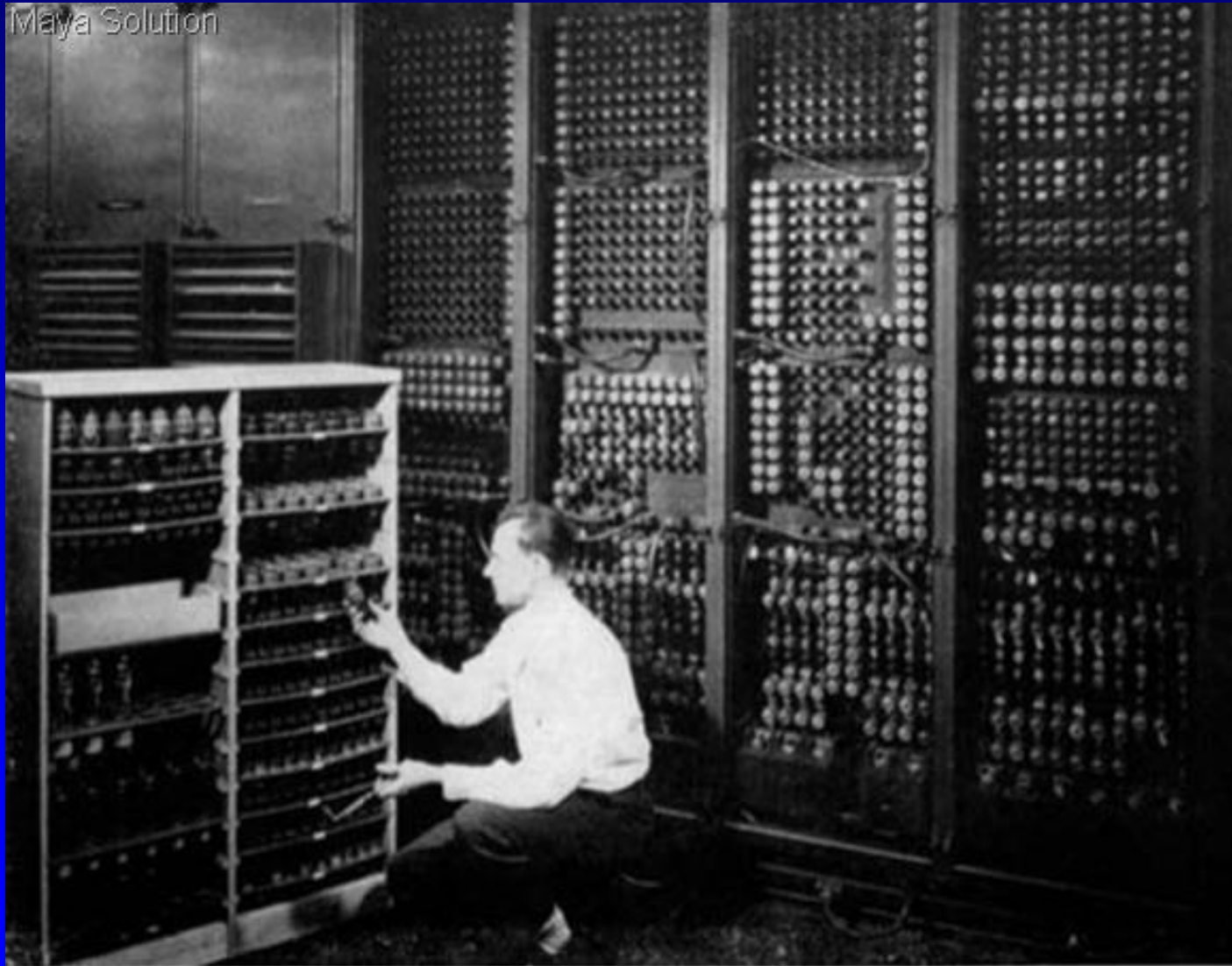
---

***Cook County Board Public Hearing  
April 29,2015***

**Advances in Science  
Have Revolutionized Our  
Way of Life...  
And Our Fundamental Views of  
Drug Abuse and Addiction**

# Then...

Maya Solution

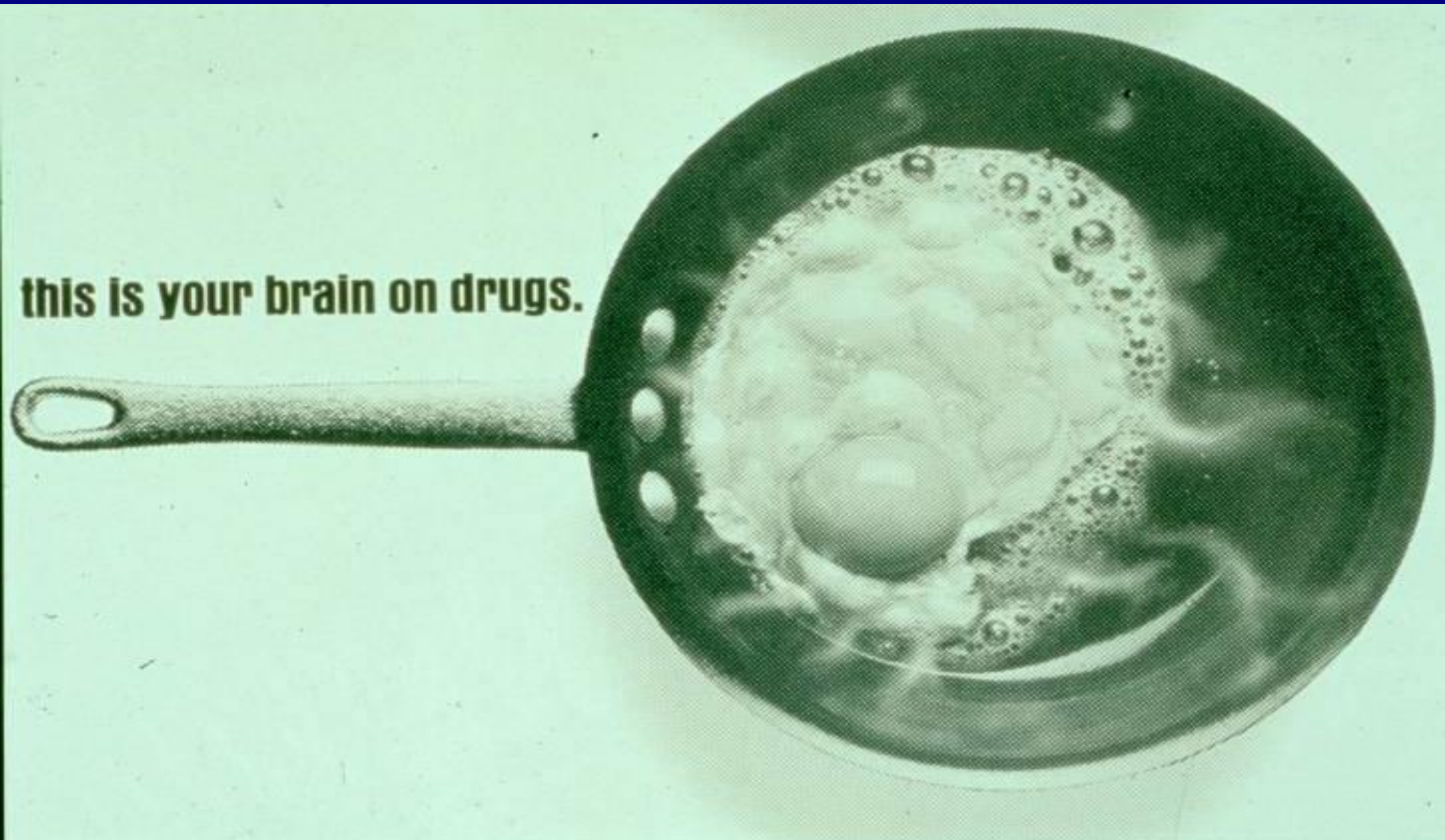


Replacing a bad tube meant checking among ENIAC's 19,000 possibilities.

# And Now



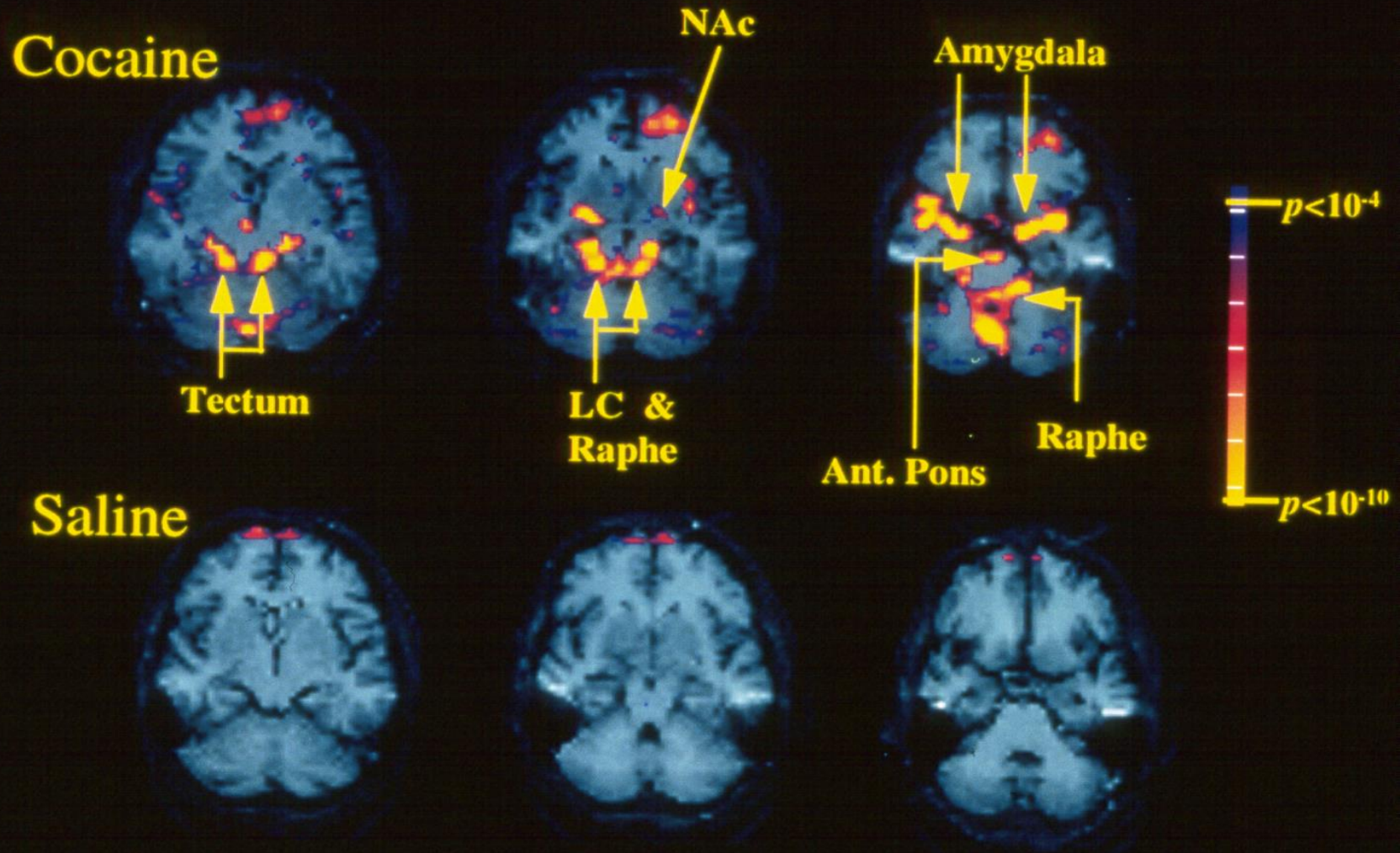
# Your Brain on Drugs - Then



**this is your brain on drugs.**



# Your Brain on Drugs – Now



MGH-NMR Center & Dept. of Psychiatry

Source: Breiter & Rosen, Ann N Y Acad Sci 1999

*What have we learned?*

**Drug Abuse Is A Preventable Behavior**

**Drug Addiction Is A Treatable Disease**

*Partnership for a Drug Free America*

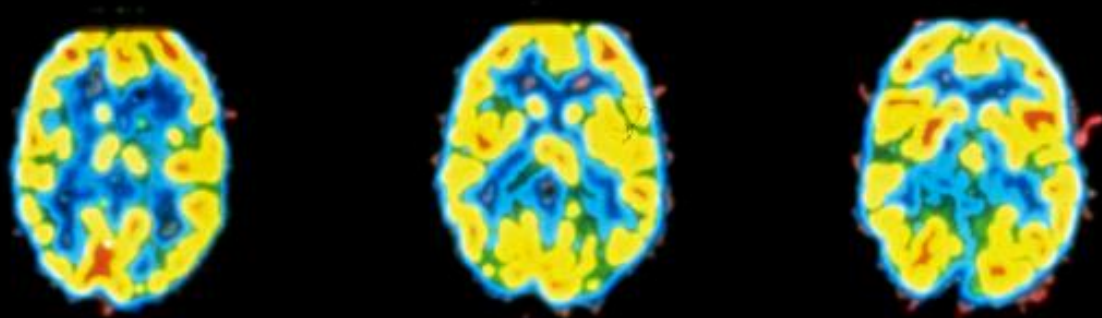


A blue outline of a human brain is centered on a solid blue background. A hand, also in blue outline, is shown holding a pen and writing on the brain. The text is overlaid on the brain's surface.

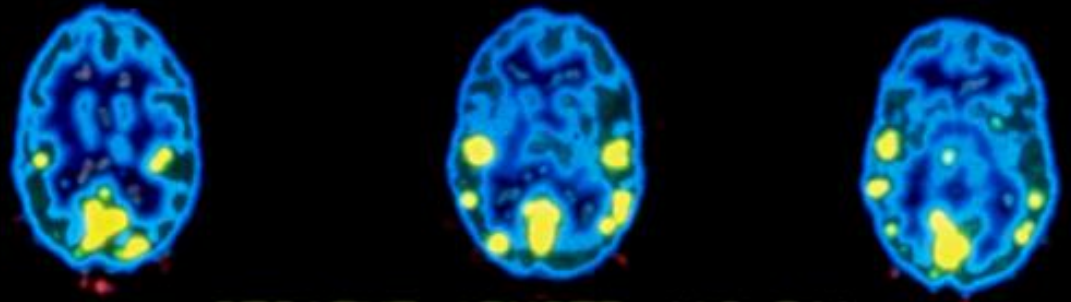
**A Major Reason People  
Take a Drug is They Like  
What It Does to Their Brains**

*Science Has Generated A Lot of  
Evidence Showing That...*

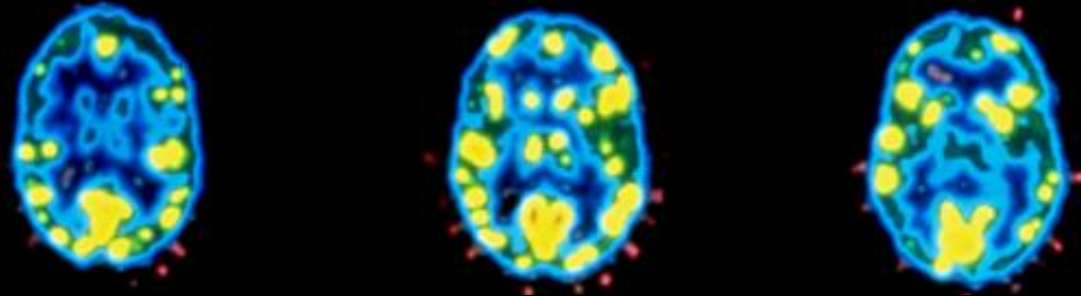
**Prolonged Drug Use Changes  
the Brain In Fundamental  
and Long-Lasting Ways**



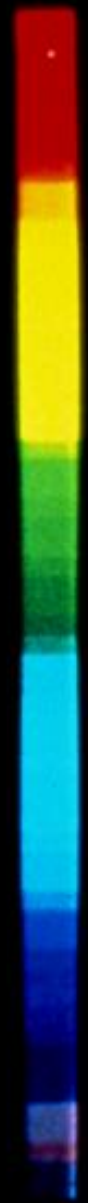
**Normal**



**Cocaine Abuser (10 Days)**

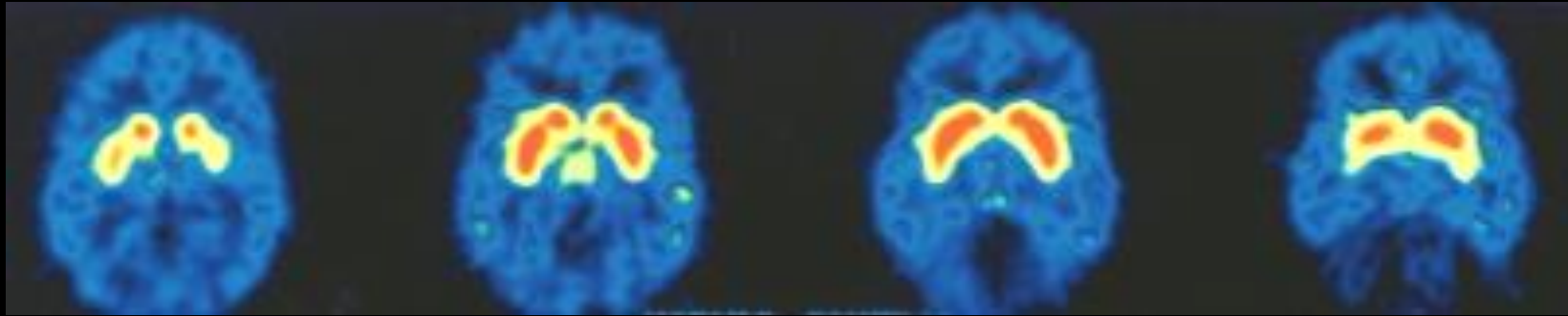


**Cocaine Abuser (100 Days)**

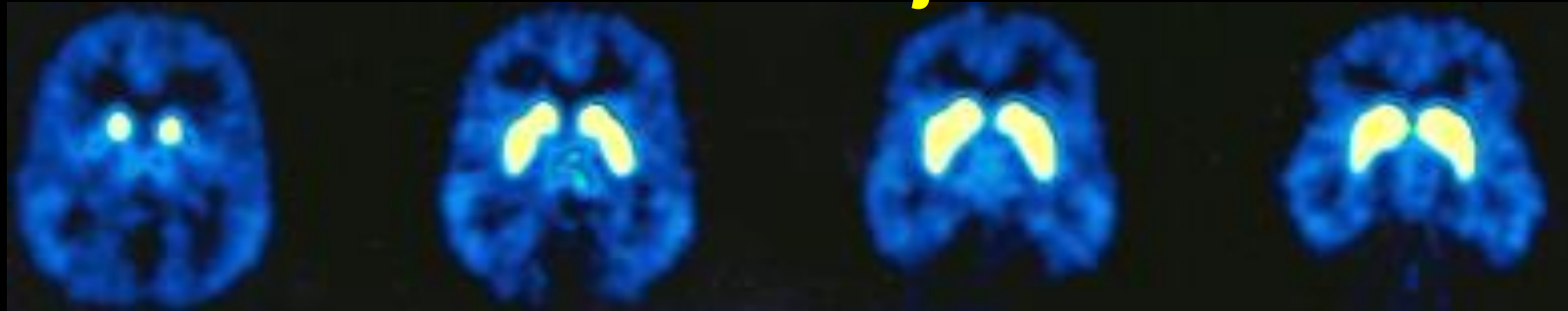


Sources: Volkow, et al., Synapse, 11:184-190, 1992 & Volkow, et al., Synapse, 14:169-177, 1993

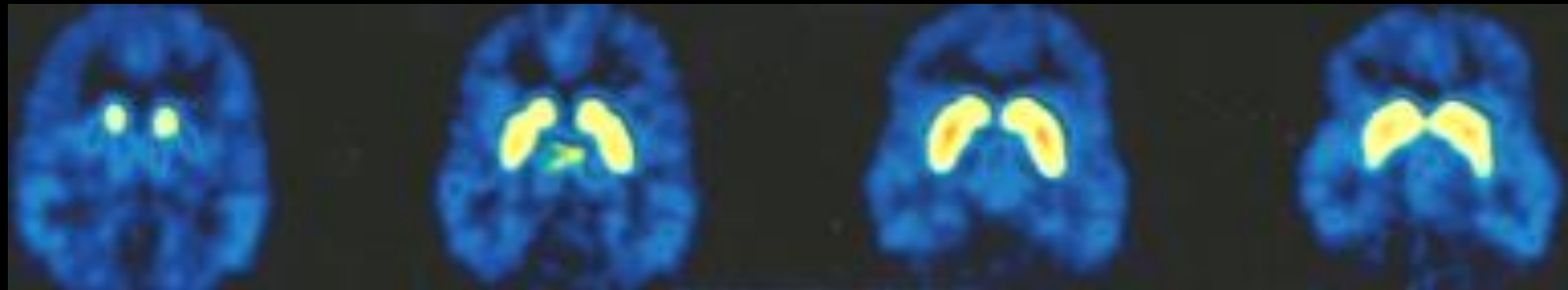
# Effect of Cocaine Abuse on Dopamine D2 Receptors



**normal subject**



**cocaine abuser (1 month post)**



**cocaine abuser (4 months post)**

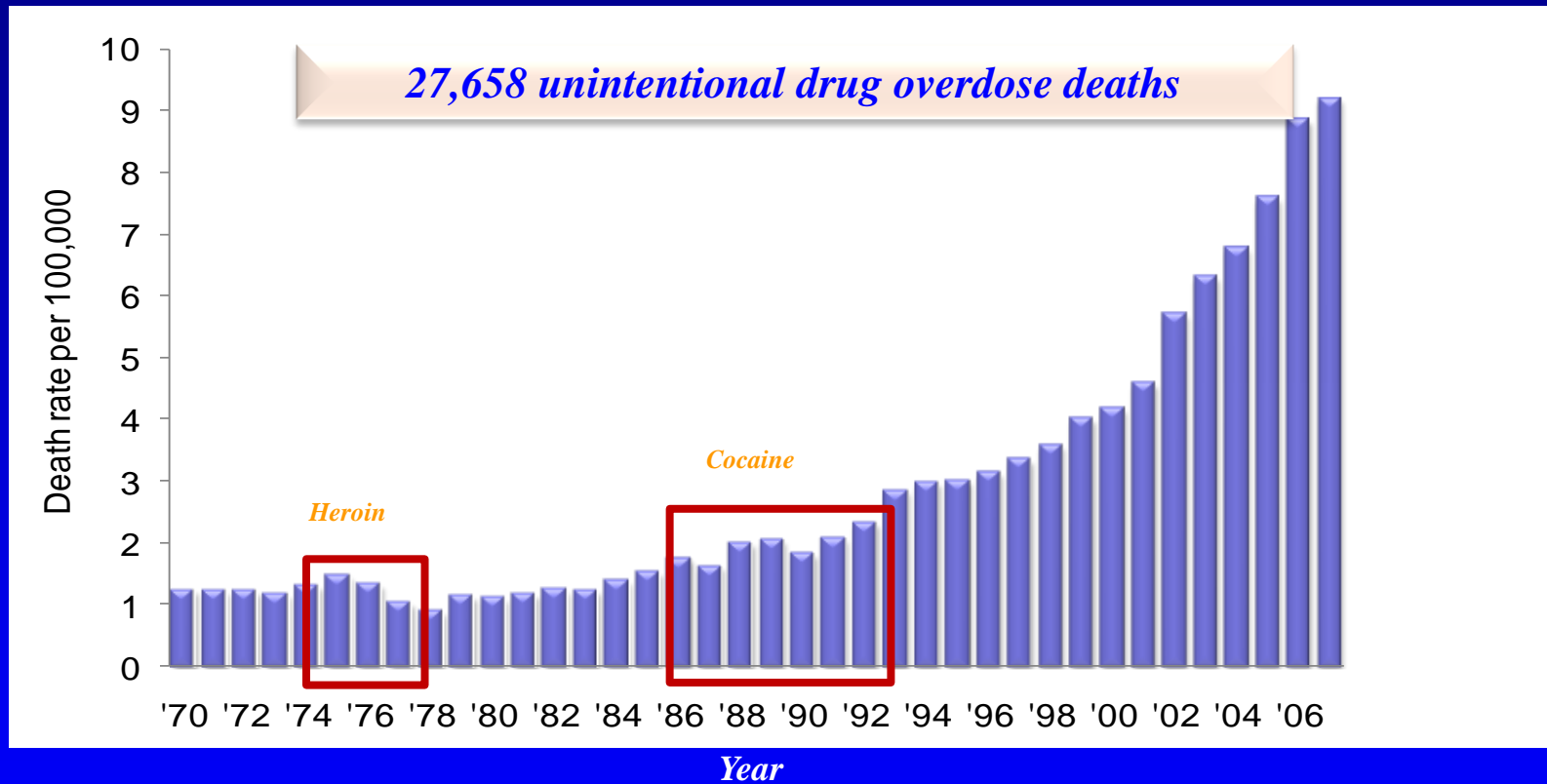




**Addiction is, Fundamentally, a  
Brain Disease**



# *Unintentional Drug Overdose Deaths United States, 1970–2007*



# Rates of Opioid Overdose Deaths and Sales, 1999-2010

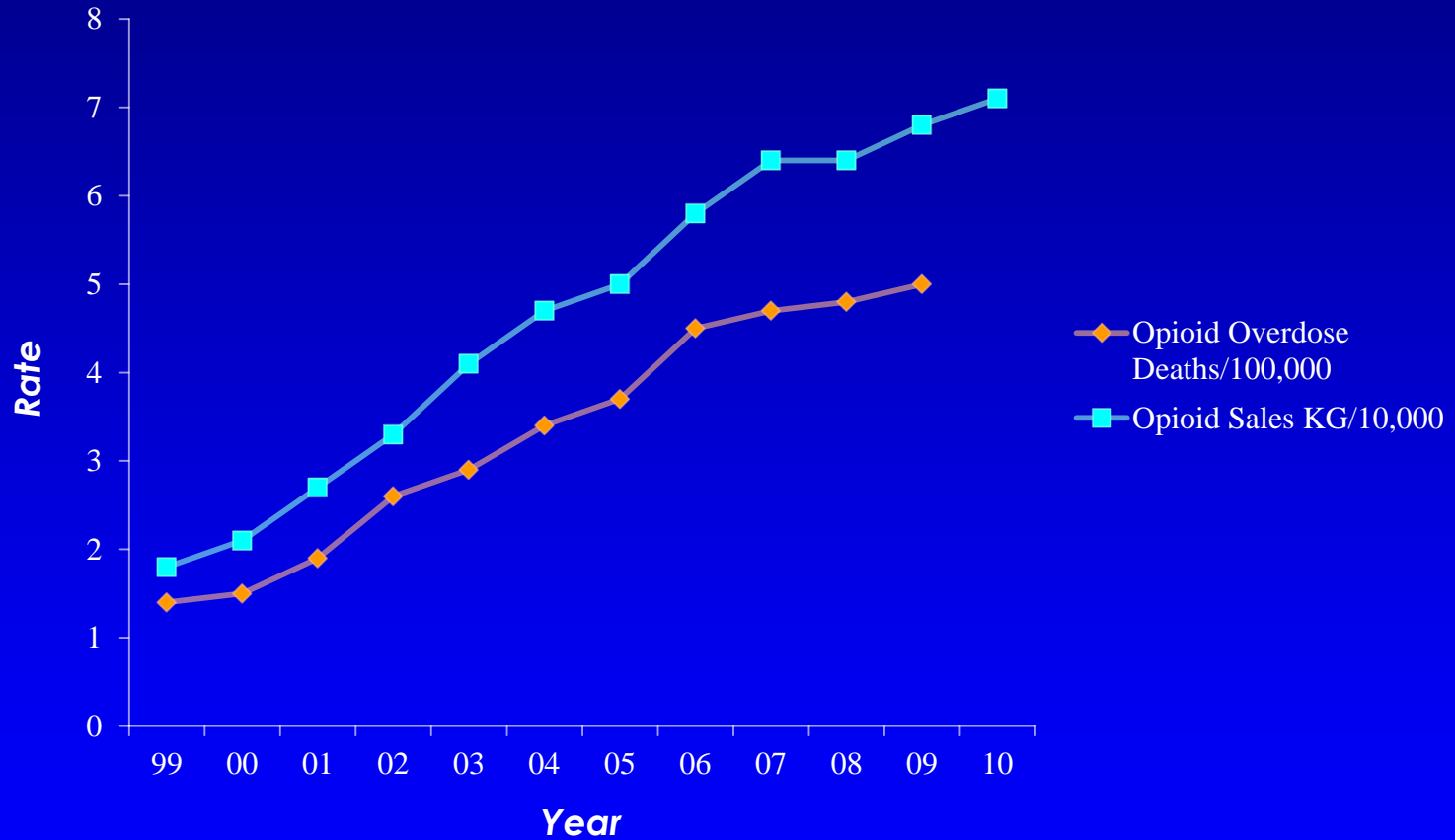
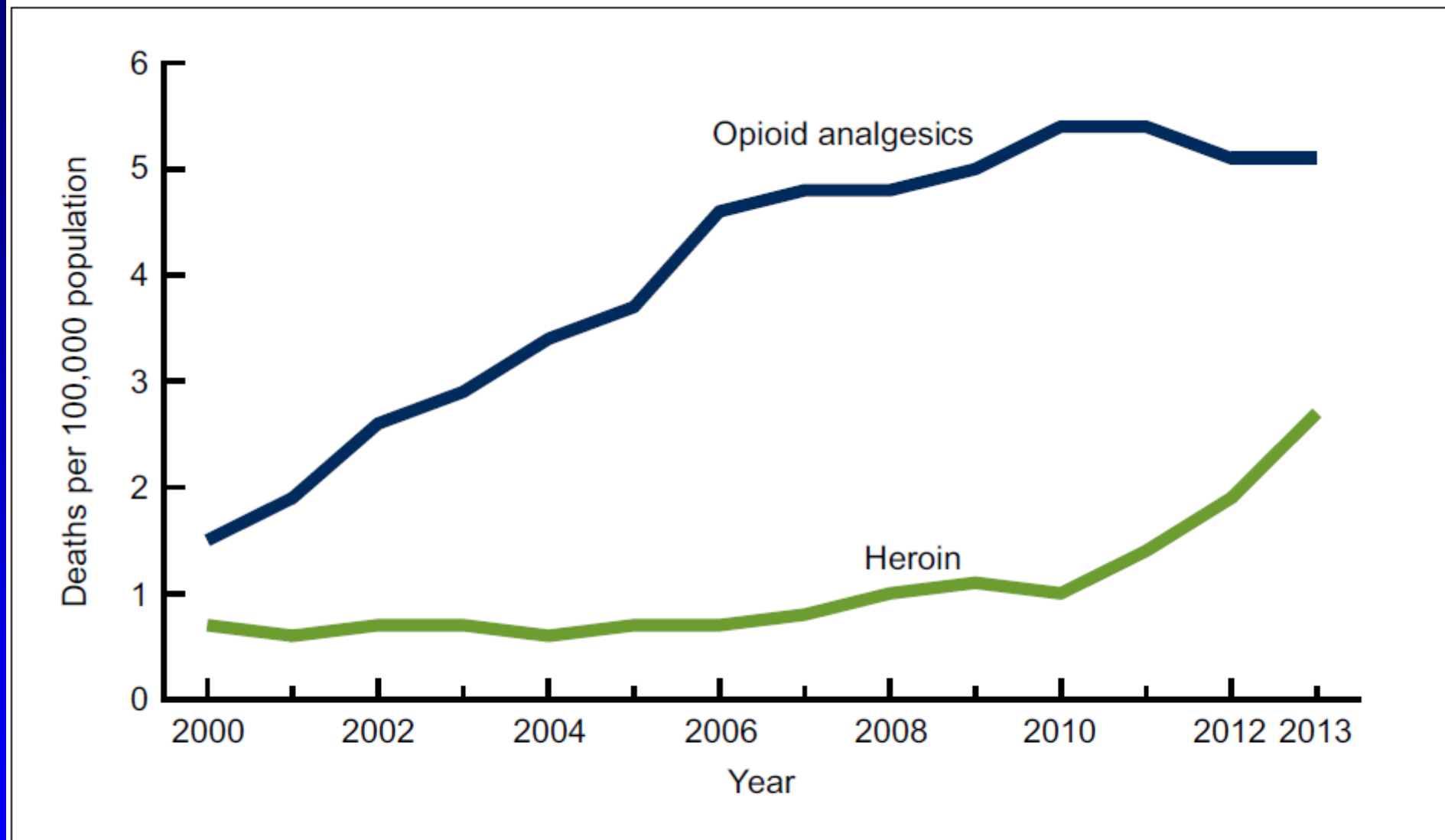
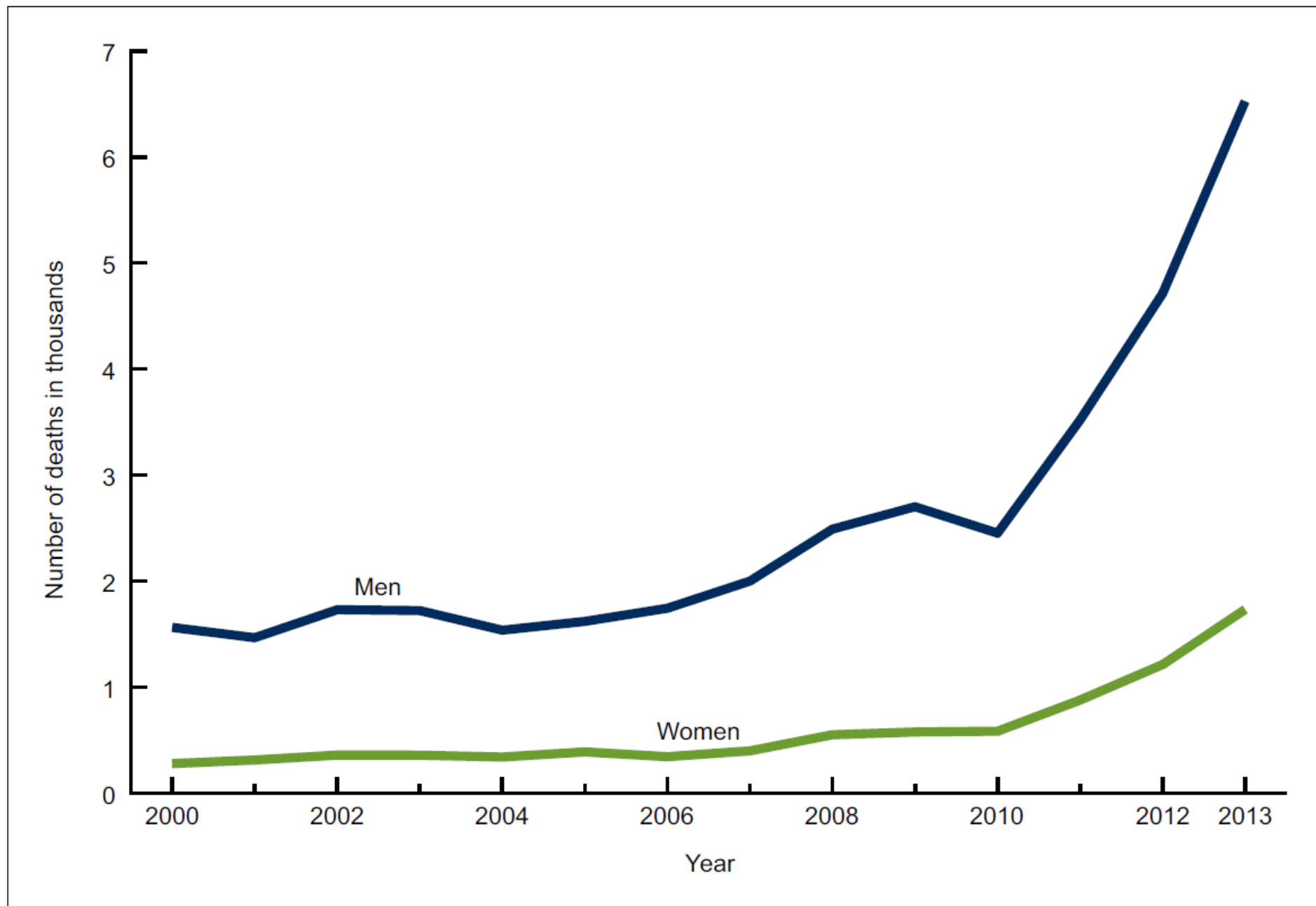


Figure 1. Age-adjusted rates for drug-poisoning deaths, by type of drug: United States, 2000–2013



NOTES: The number of drug-poisoning deaths in 2013 was 43,982, the number of drug-poisoning deaths involving opioid analgesics was 16,235, and the number of drug-poisoning deaths involving heroin was 8,257. A small subset of 1,342 deaths involved both opioid analgesics and heroin. Deaths involving both opioid analgesics and heroin are included in both the rate of deaths involving opioid analgesics and the rate of deaths involving heroin. Access data table for Figure 1 at: [http://www.cdc.gov/nchs/data/databriefs/db190\\_table.pdf#1](http://www.cdc.gov/nchs/data/databriefs/db190_table.pdf#1).

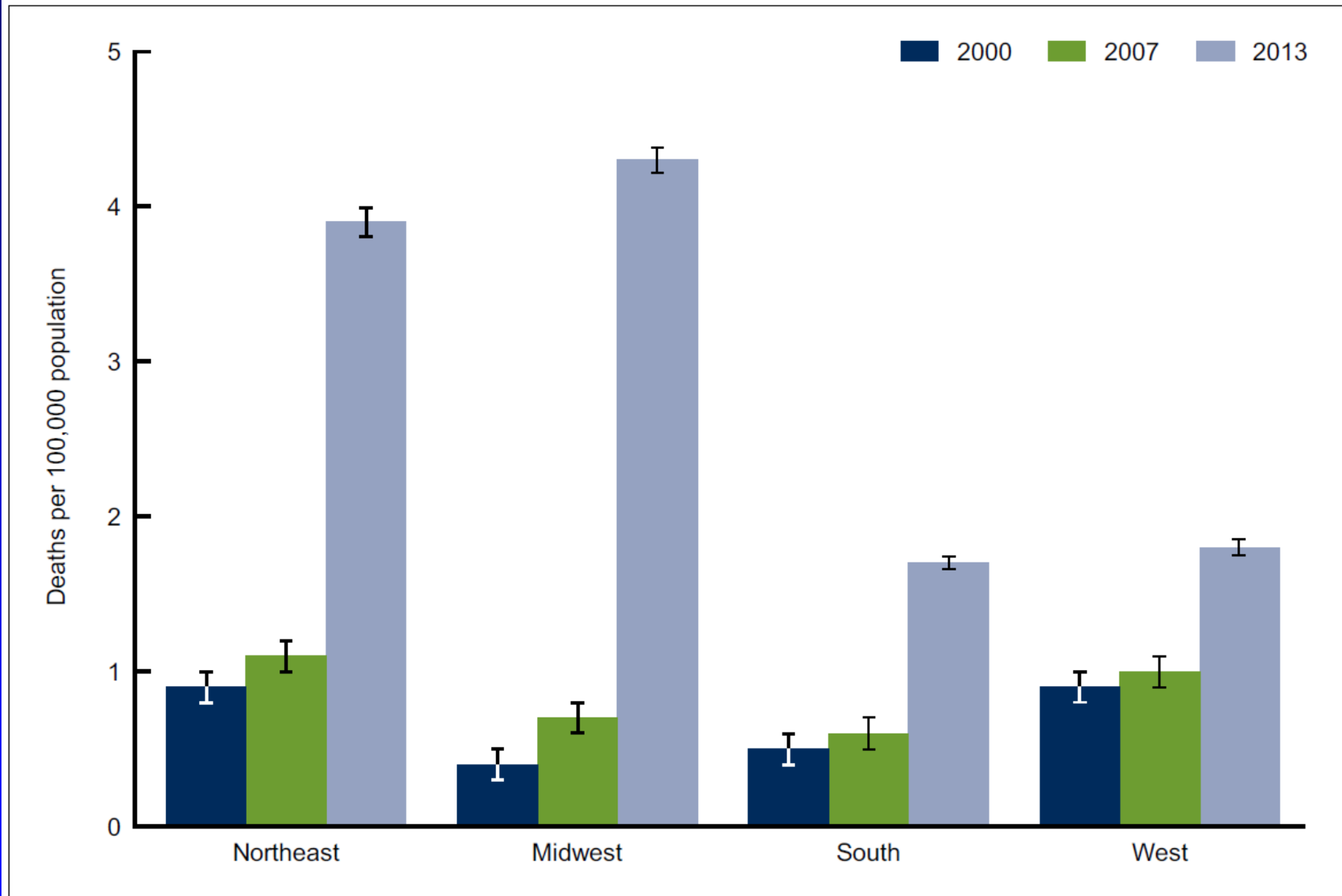
Figure 2. Number of drug-poisoning deaths involving heroin, by sex: United States, 2000–2013



NOTE: Access data table for Figure 2 at: [http://www.cdc.gov/nchs/data/databriefs/db190\\_table.pdf#2](http://www.cdc.gov/nchs/data/databriefs/db190_table.pdf#2).

SOURCE: CDC/NCHS, National Vital Statistics System, Mortality.

Figure 5. Age-adjusted rates for drug-poisoning deaths involving heroin, by census region: United States, 2000, 2007, and 2013



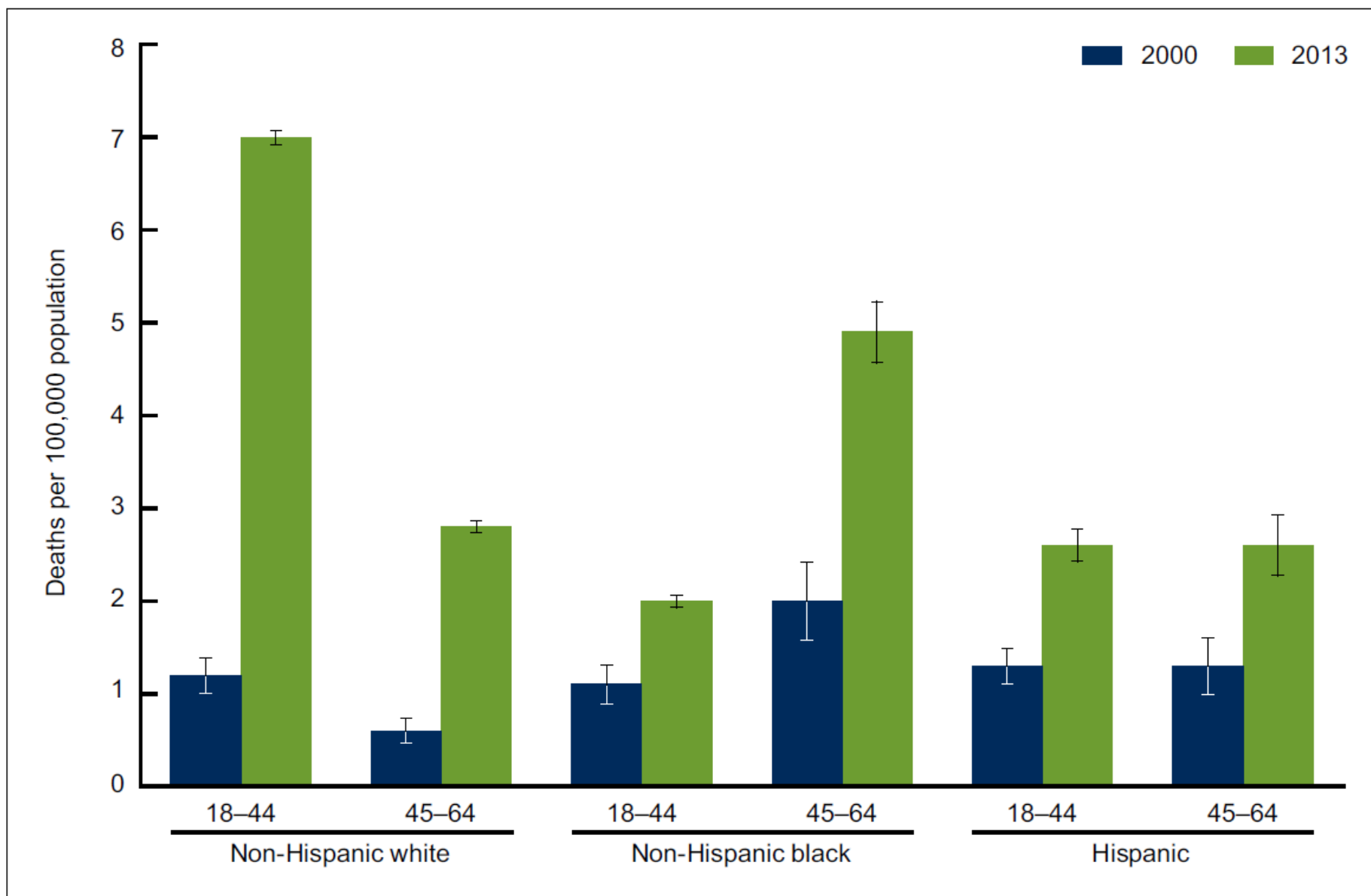
I 95% confidence interval.

NOTE: Access data table for Figure 5 at: [http://www.cdc.gov/nchs/data/databriefs/db190\\_table.pdf#5](http://www.cdc.gov/nchs/data/databriefs/db190_table.pdf#5).

SOURCE: CDC/NCHS, National Vital Statistics System, Mortality.



Figure 4. Rates for drug-poisoning deaths involving heroin, by selected age and race and ethnicity groups: United States, 2000 and 2013

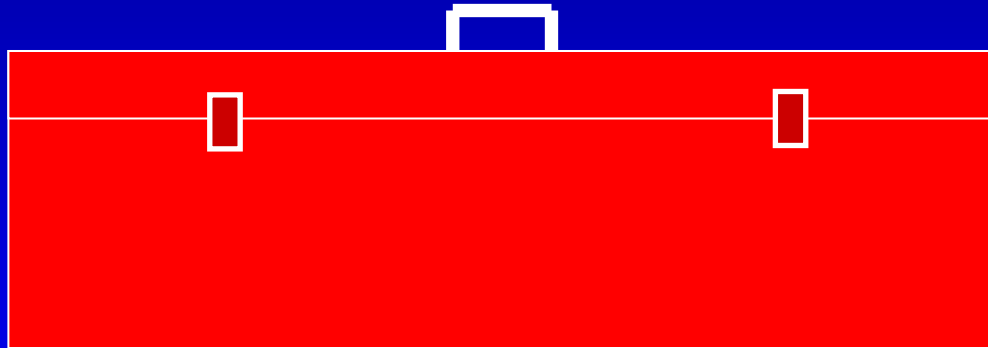


I 95% confidence interval.

NOTES: Deaths for Hispanic persons are underreported by about 5%. See "Deaths: Final Data for 2010." Access data table for Figure 4 at: [http://www.cdc.gov/nchs/data/databriefs/db190\\_table.pdf#4](http://www.cdc.gov/nchs/data/databriefs/db190_table.pdf#4).

SOURCE: CDC/NCHS, National Vital Statistics System, Mortality.

***We Have a Variety of Effective  
Treatment Options in the  
Clinical Toolbox***

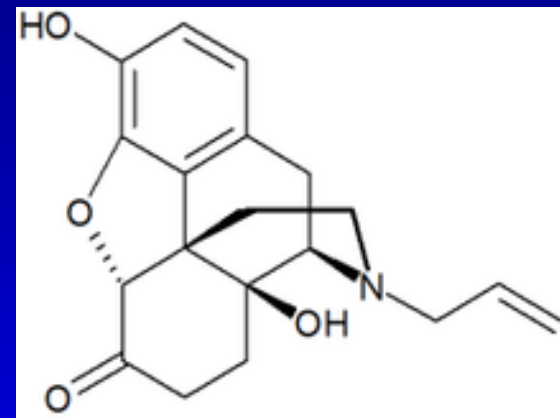


SAMHSA  
*Opioid Overdose*  
**TOOLKIT**

*Facts for Community Members*  
*Five Essential Steps for First Responders*  
*Information for Prescribers*  
*Safety Advice for Patients & Family Members*  
*Recovering from Opioid Overdose*

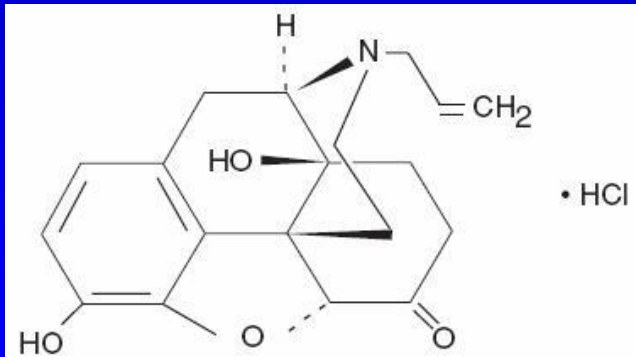


*NALOXONE*





# *Naloxone*

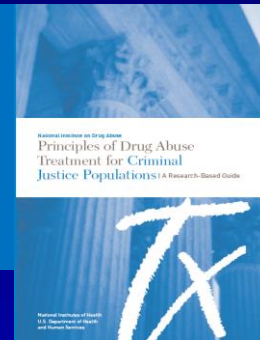


- Narcan rescue is not treatment...  
.....but it saves lives

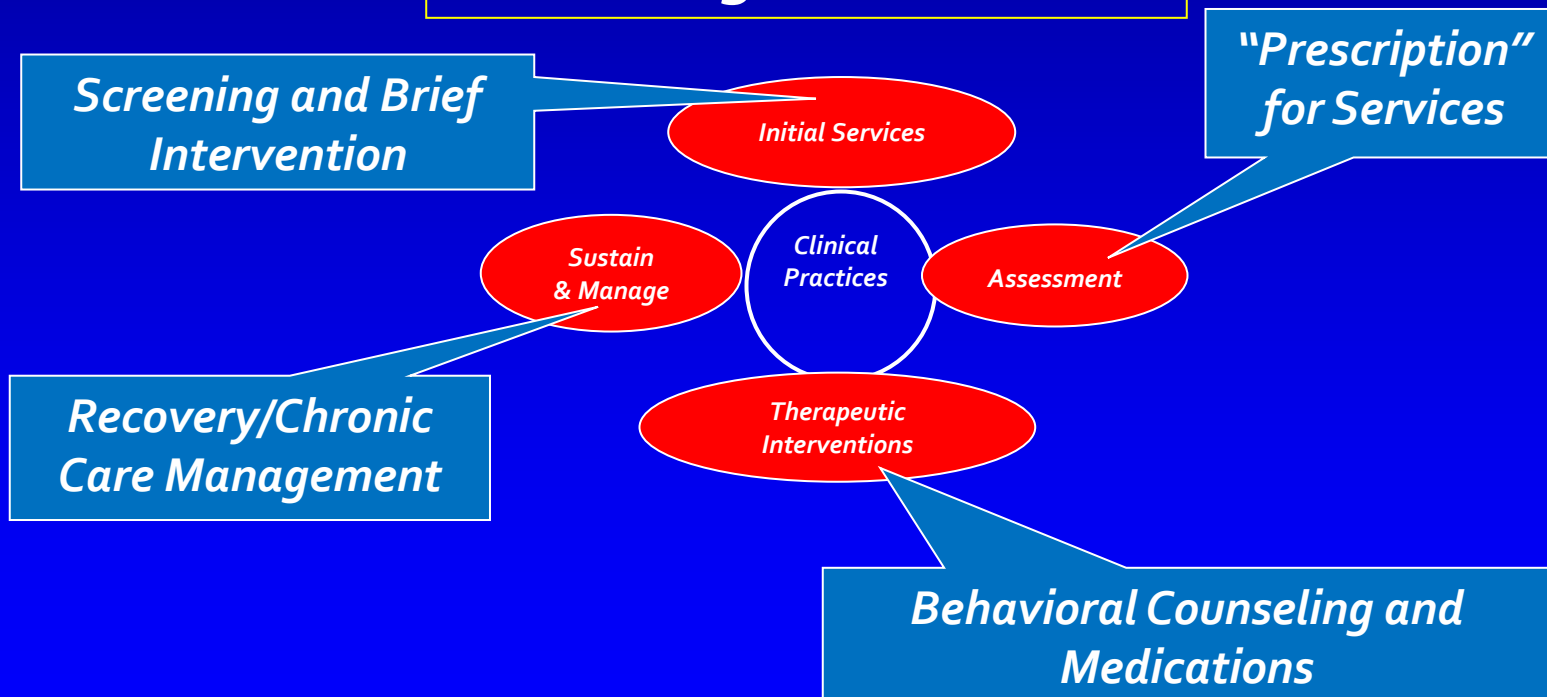


- Narcan rescue is not treatment...
- Detox is not treatment.....
  - It is the beginning of treatment...
  - .....and treatment saves lives

# What is drug treatment?



## A Chronic Care Approach to Drug Treatment



# Types of Opioid Treatment Medications

## Opioid Agonists

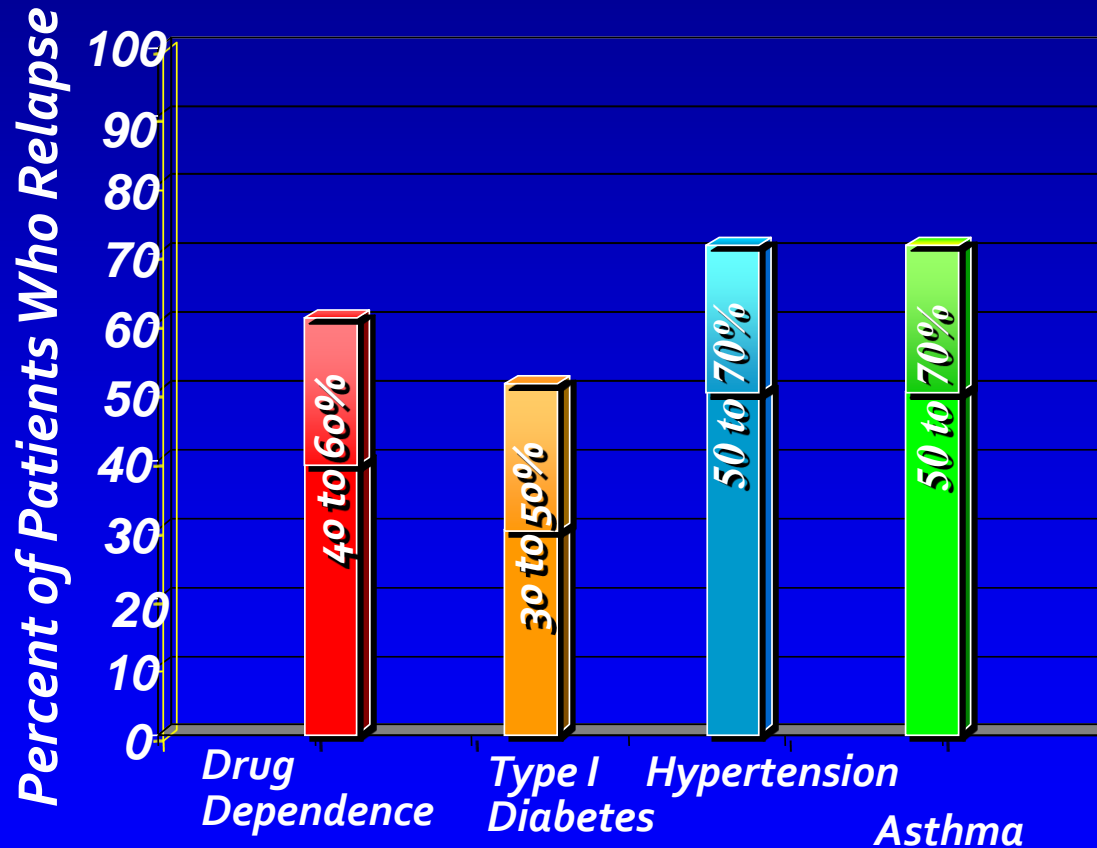
- 1) Full agonist: Methadone (oral)
- 2) Partial agonist: Buprenorphine (sublingual)

## Opioid Antagonist

- 3) Naltrexone (oral)
- 4) Extended-release Naltrexone (injection: Vivitrol)

# What are relapse rates for drug addiction?

Relapse Rates are Similar to Other Chronic Medical Conditions



Source: McLellan, A.T. et al., JAMA, Vol 284(13), October 4, 2000.

***If we treat a diabetic and symptoms don't subside....what do we do?***

***Would we increase the dose?***

***Would we change medications?***

***Would we change treatment approaches?***

***Would we fail to provide ongoing treatment for a diabetic?***

*In Treating Addiction...*

*We Need to Keep Our Eye on  
the Real Target*



**So....Advances in Science  
Have Revolutionized Our  
Fundamental Views of  
Substance Abuse and  
Addiction**



---

*Thank You*

---

***Tcondon@unm.edu***

---



*Center on Alcoholism,  
Substance Abuse & Addictions*