



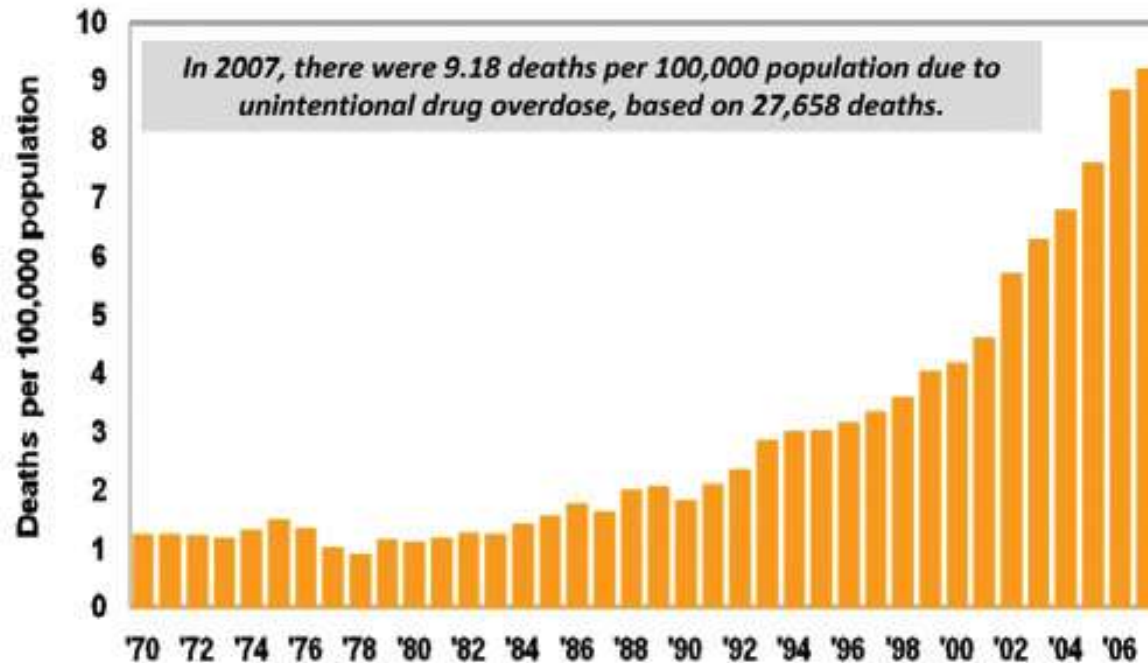
Opioid Use Disorder During Pregnancy: Balancing Risk/Benefit

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Acknowledgement: R01DA015713

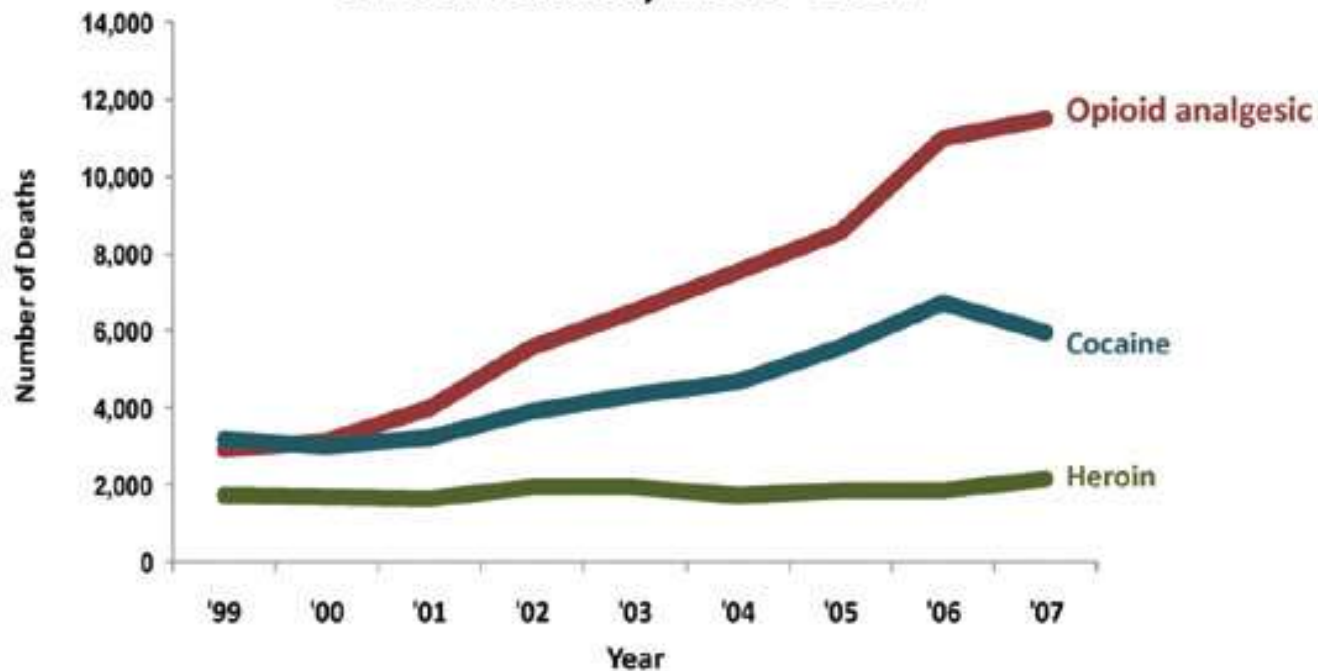
Conflicts: None

Unintentional Drug Overdose Deaths United States, 1970-2007



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

Unintentional Overdose Deaths Involving Opioid Analgesics, Cocaine and Heroin United States, 1999-2007



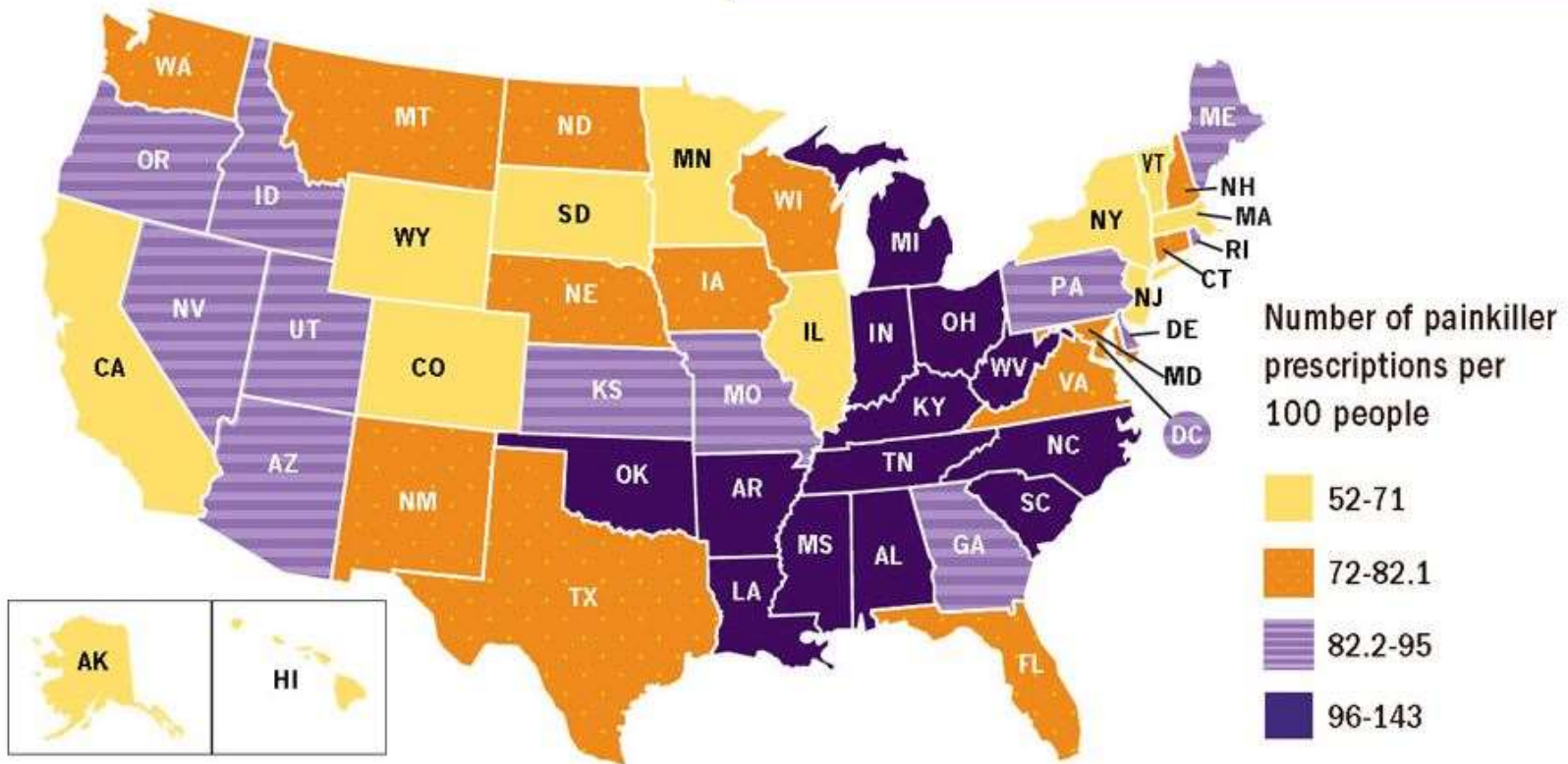
Source: Centers for Disease Control and Prevention. *Unintentional Drug Poisoning in the United States* (July 2010).

Drug-induced Deaths Second Only to Motor Vehicle Fatalities, 1999-2007



Source: National Center for Health Statistics, Centers for Disease Control and Prevention. National Vital Statistics Reports *Deaths: Final Data for the years 1999 to 2007 (2001 to 2010)*.

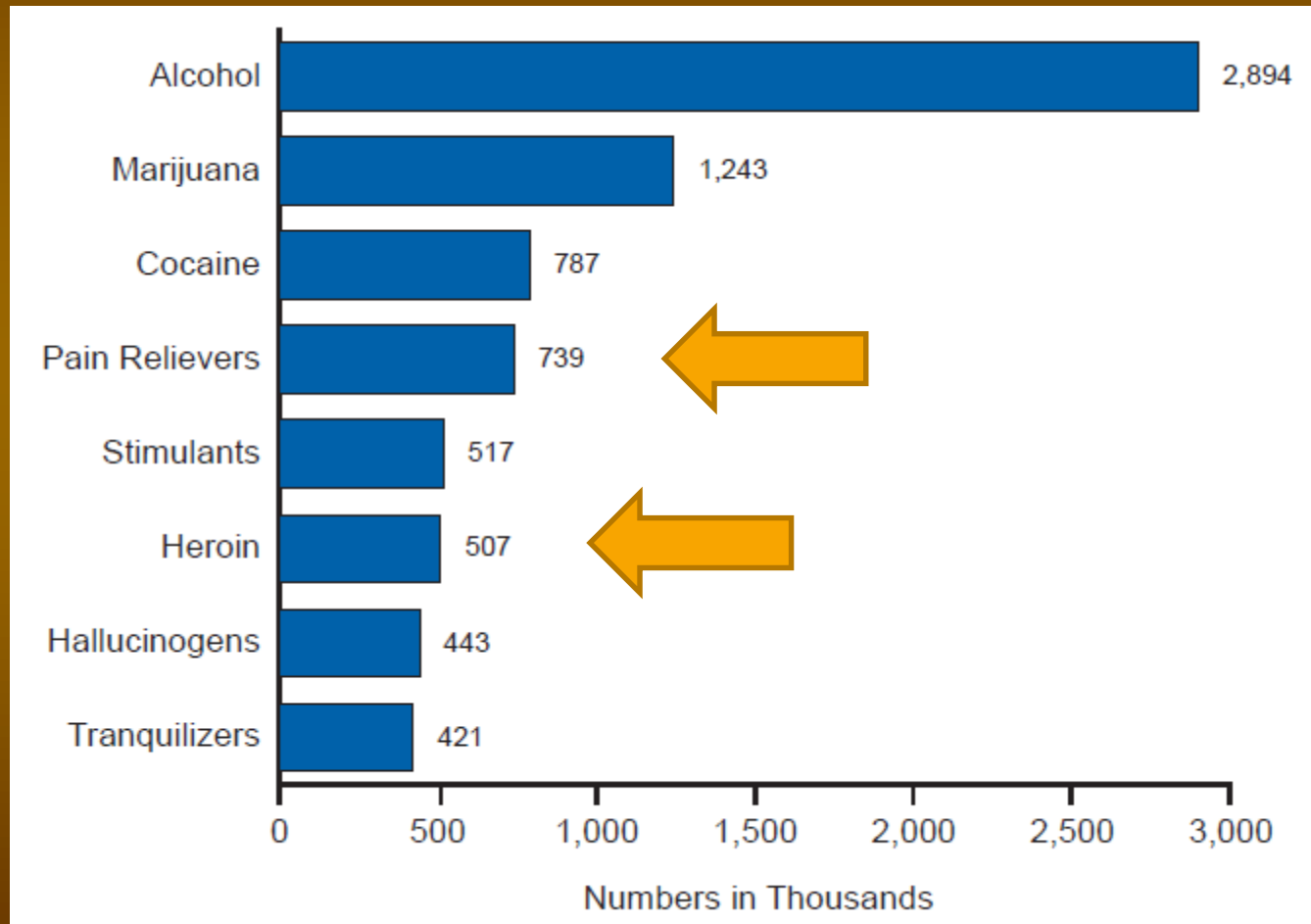
Some states have more painkiller prescriptions per person than others.



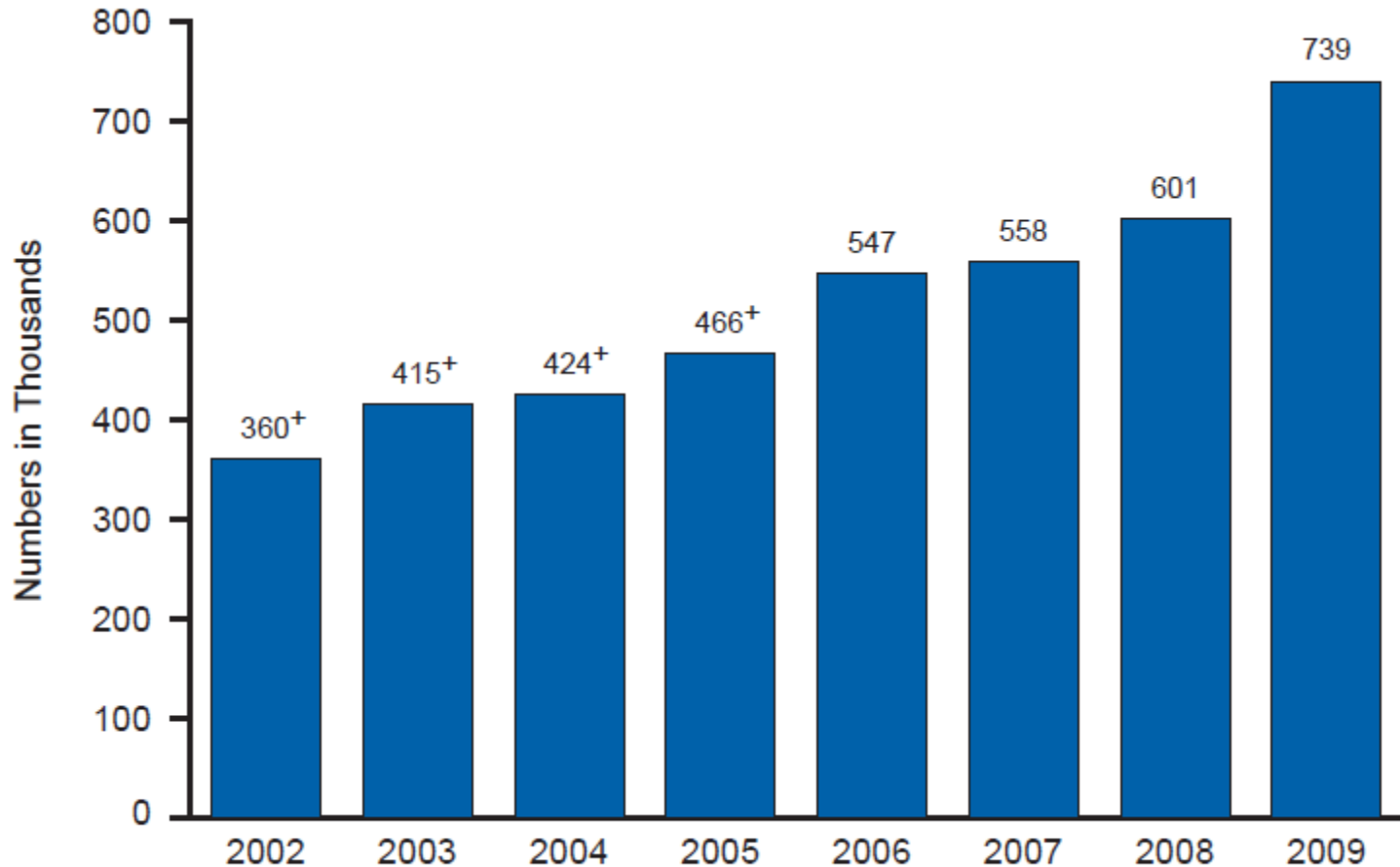
SOURCE: IMS; National Prescription Audit (NPA™), 2012.

<http://www.cdc.gov/vitalsigns/opioid-prescribing/infographic.html#map>

Drug Use Problems for which Needed Treatment was Received (≥ 12 yrs, 2009)



Treatment Past Year for Pain Relievers (≥ 12 yrs, 2009)



⁺ Difference between this estimate and the 2009 estimate is statistically significant at the .05 level.

Policy interventions have made a difference?

Making a Difference: State Successes



2012 Action:

New York required prescribers to check the state's prescription drug monitoring program before prescribing painkillers.

2013 Result:

Saw a 75% **drop in patients** who were seeing **multiple prescribers** to obtain the same drugs, which would put them at higher risk of overdose.



2010 Action:

Florida regulated pain clinics and stopped health care providers from dispensing prescription painkillers from their offices.

2012 Result:

Saw more than 50% **decrease in overdose deaths** from oxycodone.



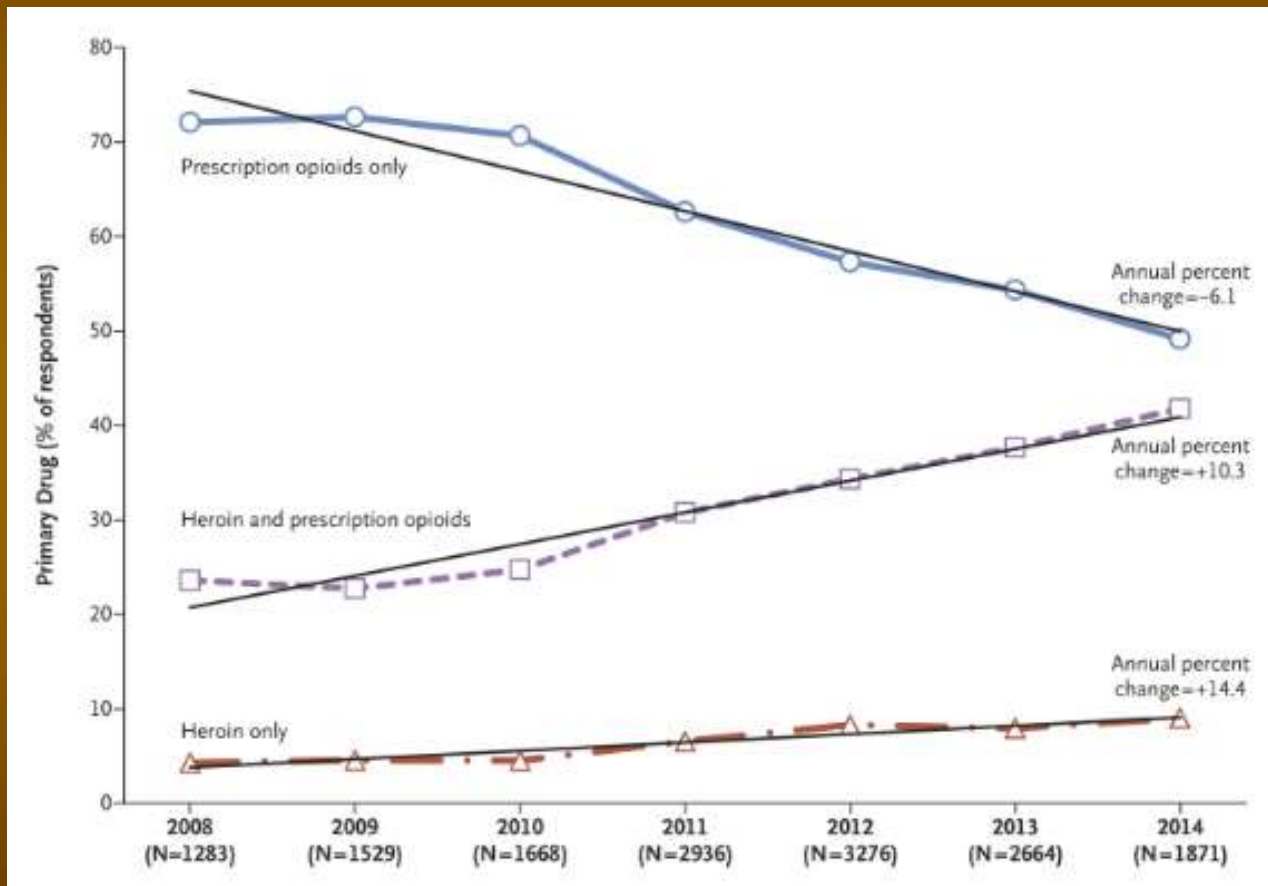
2012 Action:

Tennessee required prescribers to check the state's prescription drug monitoring program before prescribing painkillers.

2013 Result:

Saw a 36% **drop in patients** who were seeing **multiple prescribers** to obtain the same drugs, which would put them at higher risk of overdose.

National Rates of Abuse of Opioids in the Previous Month among 15,227 Respondents



Cicero et al., N Engl J Med 2015; 373:1789-1790
October 29, 2015 DOI: 10.1056/NEJMc1505541

Heroin use has soared with rise in Opioid Pain Relievers

Heroin use is part of a larger substance abuse problem.

Nearly all people who used heroin also used at least 1 other drug.

Most used at least **3** other drugs.

Heroin is a highly addictive opioid drug with a high risk of overdose and **death** for users.

People who are addicted to...



ALCOHOL

are

2x



MARIJUANA

are

3x



COCAINE

are

15x



Rx OPIOID PAINKILLERS

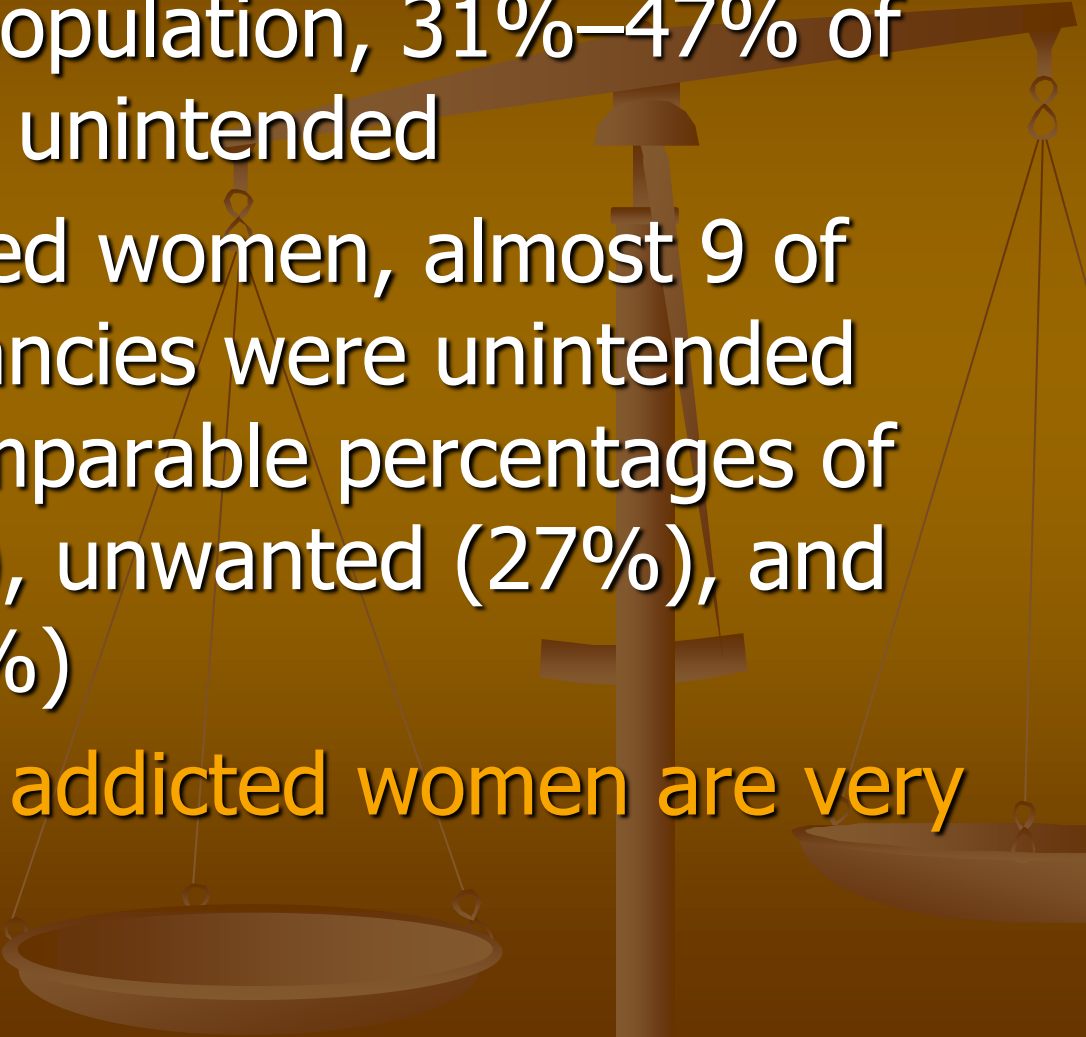
are

40x

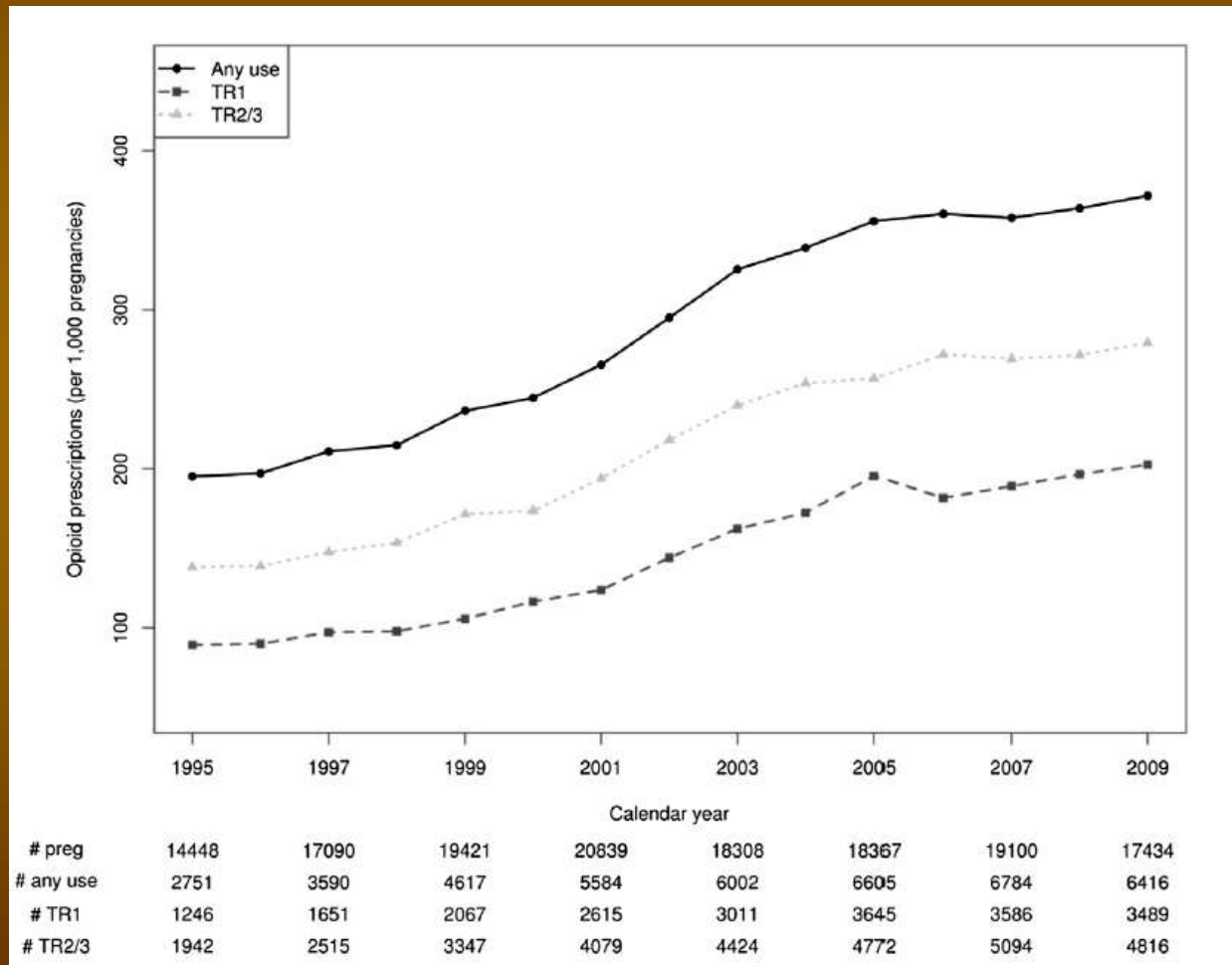
...more likely to be addicted to heroin.

SOURCE: National Survey on Drug Use and Health (NSDUH), 2011-2013.

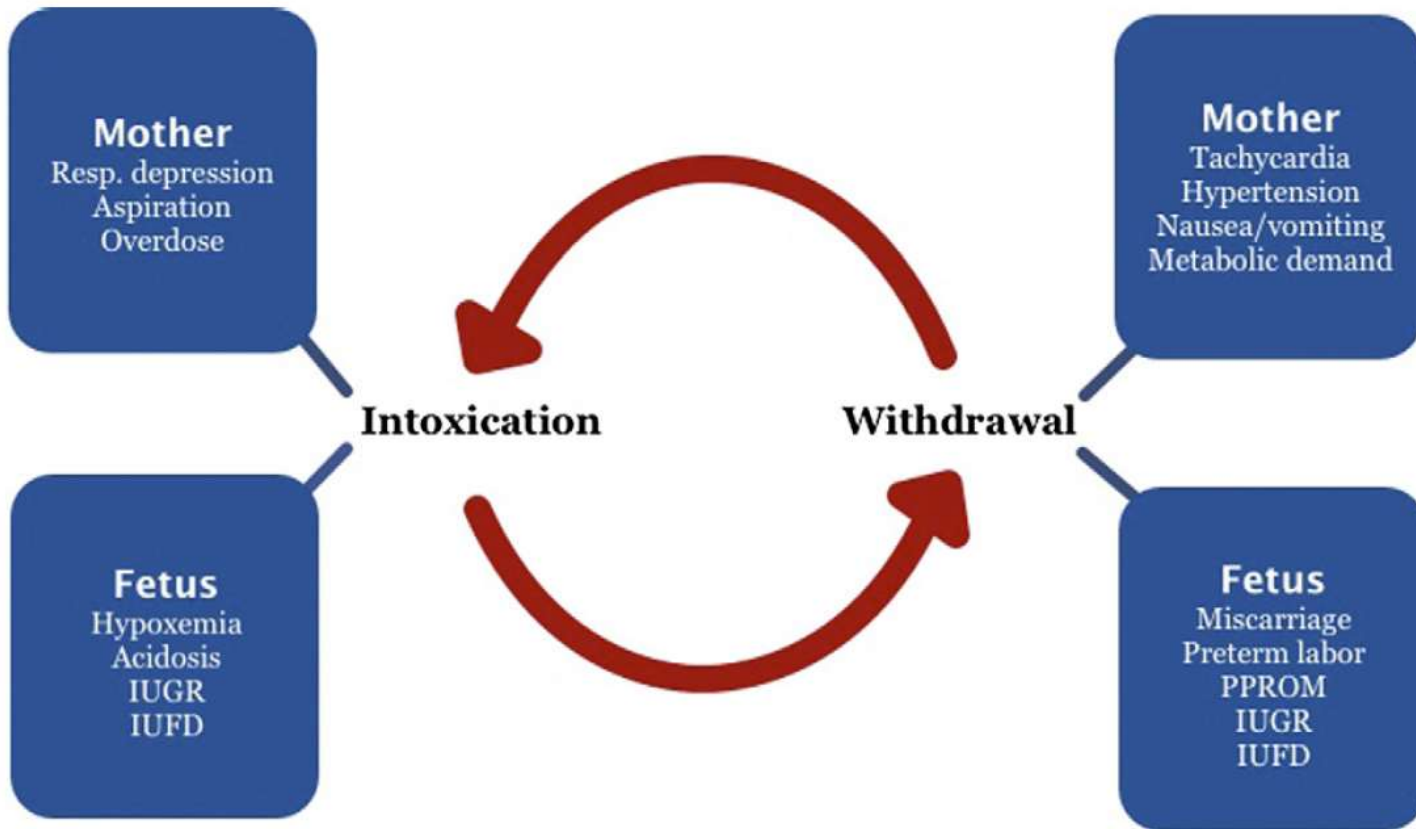
Unintended Pregnancies in Opioid Use Disorder (OUD)

- In the general population, 31%–47% of pregnancies are unintended
 - In opioid addicted women, almost 9 of every 10 pregnancies were unintended (86%), with comparable percentages of mistimed (34%), unwanted (27%), and ambivalent (26%)
 - Pregnant opioid addicted women are very prevalent
- 

Opioid analgesic use during pregnancy: TNcare, 1995-2009



Effects of opioid intoxication and withdrawal in pregnancy



Legend: IUGR=Intrauterine growth restriction; IUFD=Intrauterine fetal demise; PPROM=Premature preterm rupture of membranes

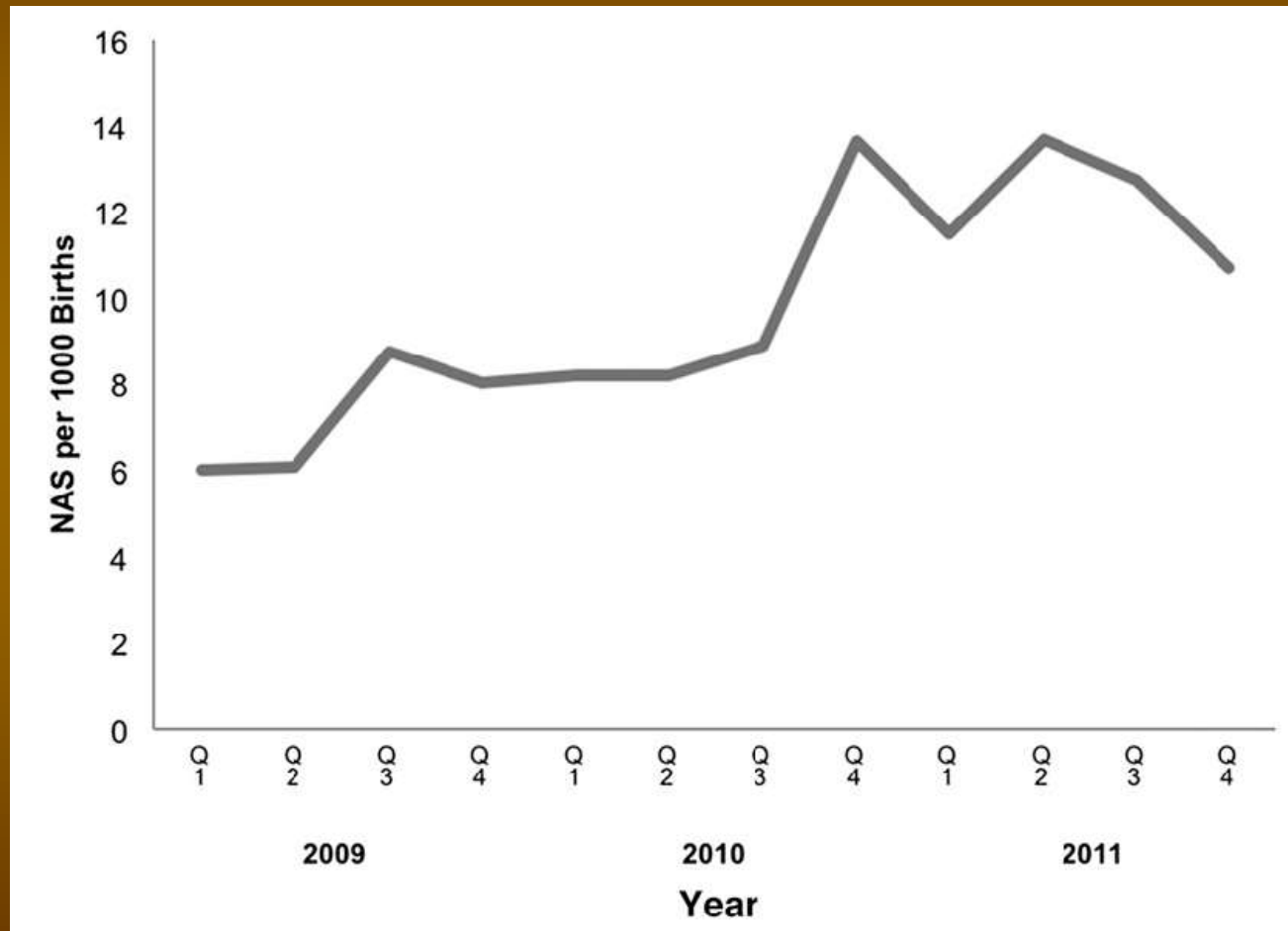
Neonatal Abstinence Syndrome



- **Neurologic excitability**
 - irritability, hyperactivity, sleep disturbance
- **Gastrointestinal dysfunction**
 - uncoordinated sucking/swallowing, vomiting
- **Autonomic Signs**
 - fever, sweating, nasal stuffiness

Finnegan & Kaltenbach, 1992

Rate of NAS in TNcare per quarter, 2009 - 2011



Opioid Agonist Medications

- **Methadone** recognized as the standard of care in pregnancy for >40 years; discontinuation can cause significant neonatal abstinence syndrome (NAS)
- **Buprenorphine** recognized as highly effective for treatment of opioid dependence with less severe withdrawal; use in pregnancy relatively recent
- Less NAS with buprenorphine?



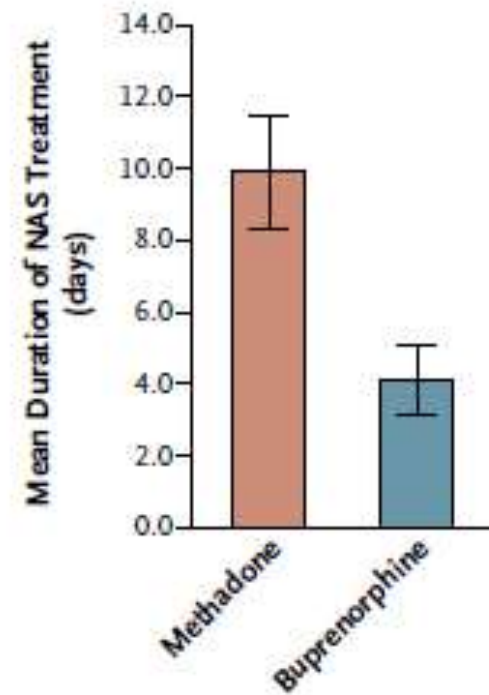
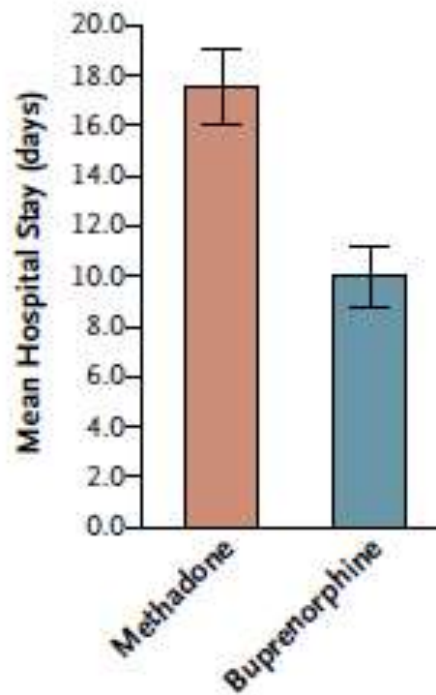
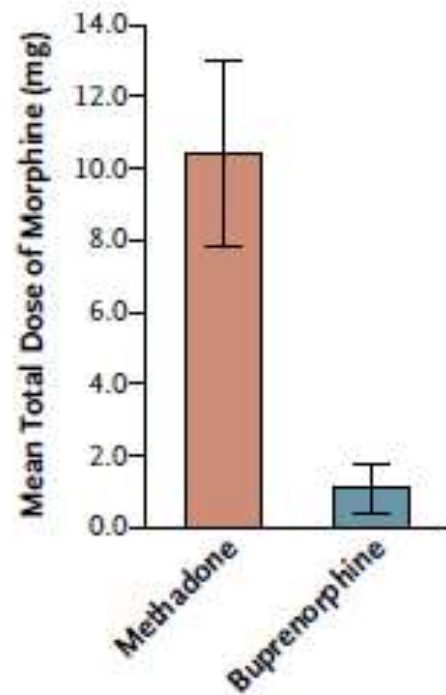
ORIGINAL ARTICLE

Neonatal Abstinence Syndrome after Methadone or Buprenorphine Exposure

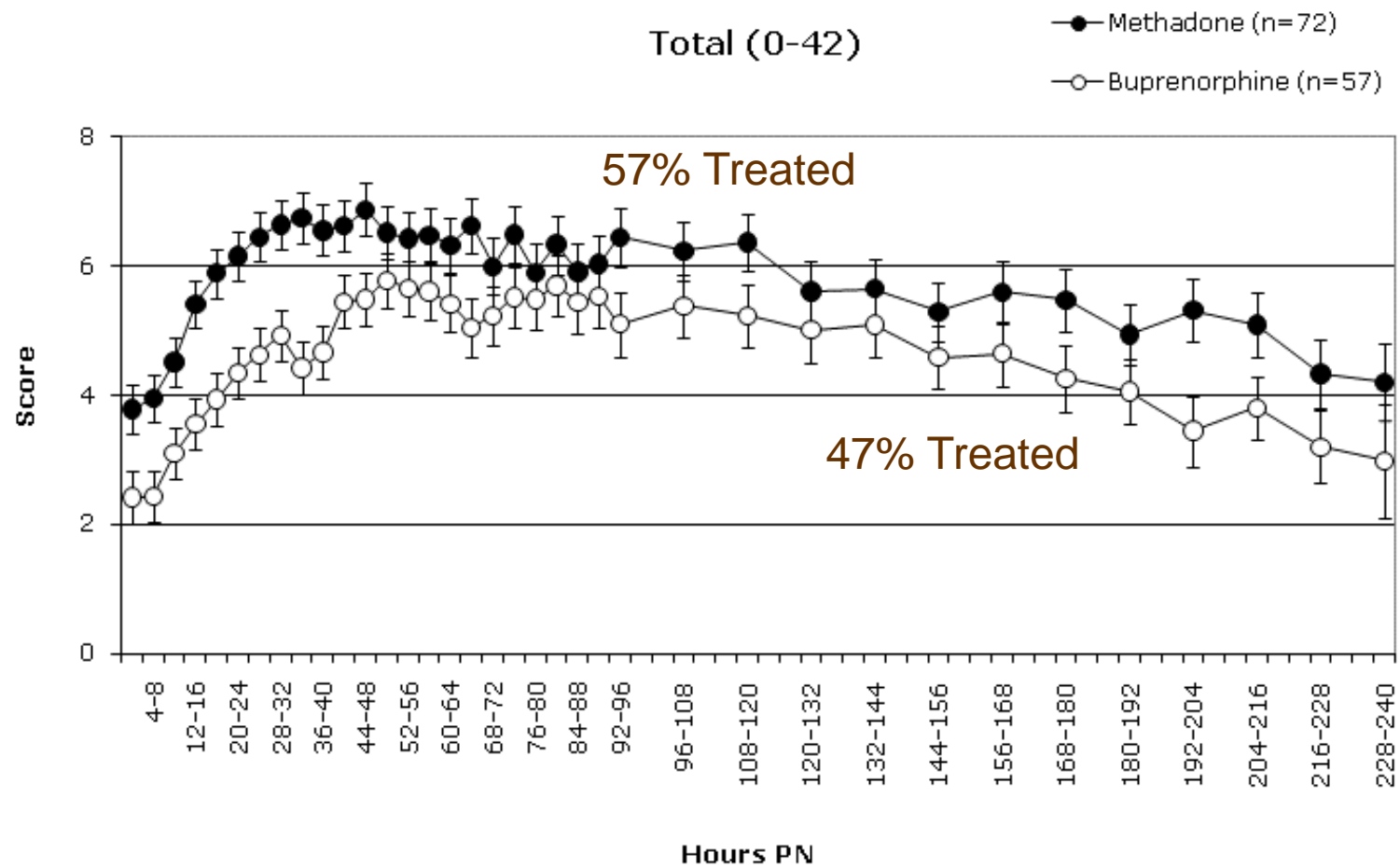
Hendrée E. Jones, Ph.D., Karol Kaltenbach, Ph.D., Sarah H. Heil, Ph.D., Susan M. Stine, M.D., Ph.D., Mara G. Coyle, M.D., Amelia M. Arria, Ph.D., Kevin E. O'Grady, Ph.D., Peter Selby, M.B., B.S., Peter R. Martin, M.D., and Gabriele Fischer, M.D.

Objective: To compare, for the first time, in opioid-dependent women, maternal and neonatal outcomes of treatment with buprenorphine or methadone throughout pregnancy in a large multi-center randomized, controlled, double-blind/double-dummy clinical trial.

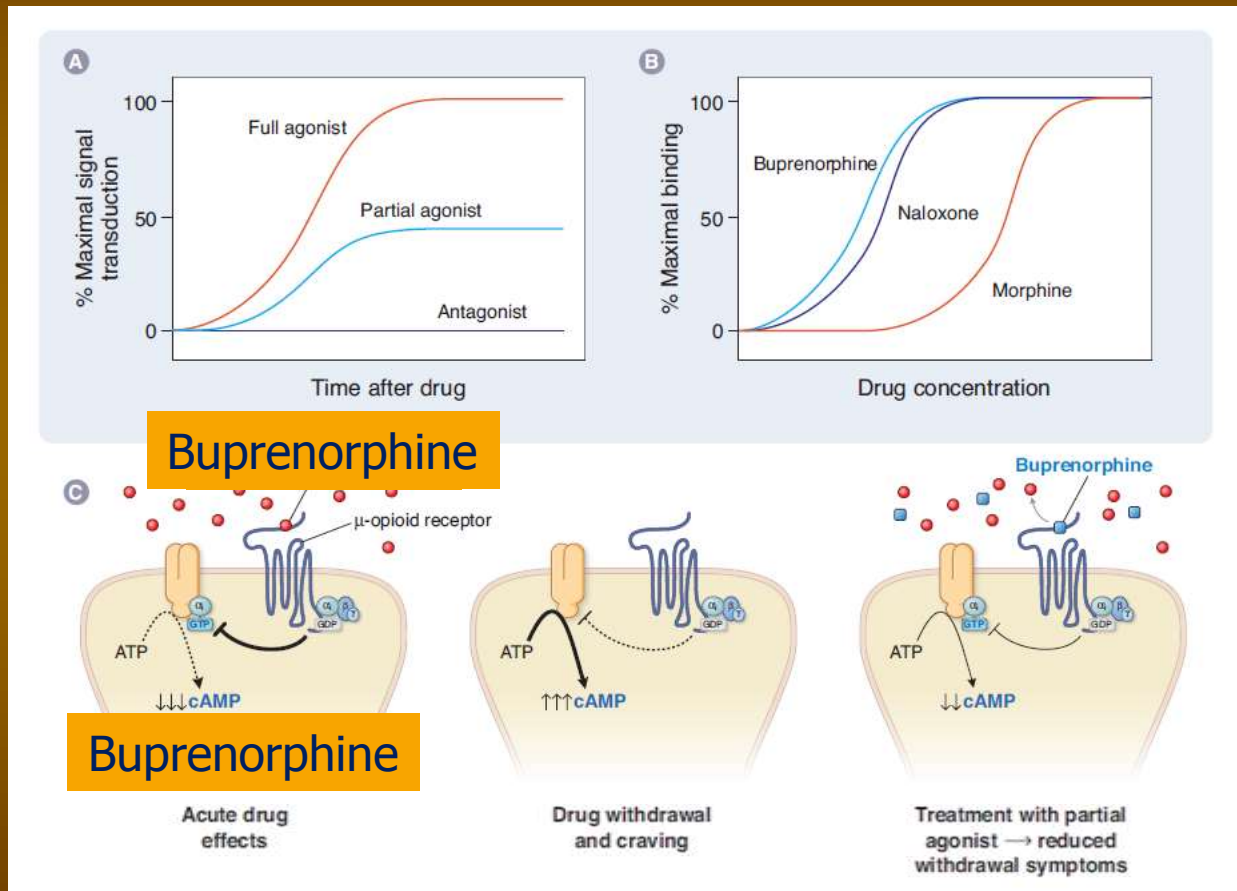
Morphine Dose, Length of Hospital Stay, and Treatment Duration for NAS



NAS Scores in Buprenorphine- and Methadone-exposed Neonates



Treatment of opioid use disorder with full or partial mu agonists



Buprenorphine Summary

- Buprenorphine is a *partial* opioid agonist:
 - less (~50%) opioid effects than heroin, methadone
 - less potential for toxicity
- Monitoring generally required for induction
- Withdrawal is less severe than other opioids
- Buprenorphine administration will result in *precipitated withdrawal* in person physically dependent on opioids
- Only in presence of opioid withdrawal can buprenorphine act as an agonist, otherwise it functions as an antagonist