

# The Opioid Epidemic and Neonatal Abstinence Syndrome

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**OPQIC Summit**

*Oklahoma City, OK*

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# Relevant Disclosures

Under the Oklahoma State Medical Association CME guidelines disclosure must be made regarding relevant financial relationships with commercial interests within the last 12 months.

Stephen Patrick has no financial relationships or affiliations to disclose.

# History



# Transactions

of the

Fifty-Ninth Annual Session

of the

# Medical Society

of the

State of Tennessee,

Knoxville, 1892.



The Sixtieth Annual Session will be held in Nashville, commencing the Second Tuesday in April, 1893.

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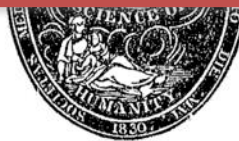
# Transactions

of the

## Fifty-Ninth Annual Session

The quantity of opium used in the United States has largely and rapidly increased. In 1859 the amount imported was about 72000 pounds, in 1880, 372000 pounds, in 1890, about a half million pounds. The legitimate demands of medicine would call for an increase in quantity commensurate with the increase in population ; but see the contrast:—

The difference between the legitimate demands of medicine and the actual amount used shows how much approximately is consumed by opium eaters. This fact no doubt largely accounts for the rapid increase in the number of cases of insanity, idiocy, and imbecility in the present generation.



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# Transactions

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## Fifty-Ninth Annual Session

CASE V. Mrs. — used morphine for years, and at the time of the birth of her third child was consuming eight or ten grains a day. In 1884 she gave birth to a well nourished and apparently perfectly developed boy, weight seven or eight pounds. Within twenty-four hours the child began to grow restless and nervous. In the next twenty-four hours this nervousness increased, and the child frequently became cyanotic; on the third day all the symptoms grew worse, the cyanotic condition continuing almost all the time; on the fourth day the child died. Not knowing anything



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The Sixtieth Annual Session will be held in Nashville, commencing the Second Tuesday in April, 1893.





Frakt, Austin. "Painkiller Abuse, a Cyclical Challenge." The New York Times 22 Dec. 2014.

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- 
- **1827 Morphine marketed by Merck**
  - **Pain relief**
  - **Treatment of 'opium addiction'**
  - **Treatment of 'alcoholism'**

Frakt, Austin. "Painkiller Abuse, a Cyclical Challenge." The New York Times 22 Dec. 2014.

Additional Source: Hendree Jones, PhD

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- 
- **1874 Diacetylmorphine discovered**
  - **1898 Bayer pharmaceutical marketed under name Heroin**
  - **The marketing campaign**
    - ✦ **"safe, non-addictive" substitute for morphine**
  - **1906 American Medical Association approved Heroin for general use and recommended that it be used in place of morphine**



Frakt, Austin. "Painkiller Abuse, a Cyclical Challenge." The New York Times 22 Dec. 2014.

Additional Source: Hendree Jones, PhD

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# NEJM 1980

- Comprehensive drug surveillance. JAMA. 1970; 213:1455-60.
2. Miller RR, Jick H. Clinical effects of meperidine in hospitalized medical patients. J Clin Pharmacol. 1978; 18:180-8.
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## PROGNOSTIC VALUE OF IMMUNOLOGIC MARKERS IN ADULTS WITH ACUTE LYMPHOBLASTIC LEUKEMIA

*To the Editor:* The letter from Dr. Bitran<sup>1</sup> has raised an important but as yet unsettled question about prognostic factors in acute lymphoblastic leukemia in adults. On the basis of experience with 13 patients, Dr. Bitran suggested that adults with T-cell disease could have a limited survival and a lower rate of remission than those with B-cell disease. From January, 1974, to June, 1979, we studied 42 consecutive adults (more than 12 years old) with acute lymphoblastic leukemia for sheep-erythrocyte rosette formation and surface immunoglobulins. Patients were classified as having T-cell disease if they had more than 40 per cent of marrow blast cells forming E-rosettes, or B-cell disease if they were positive for surface immunoglobulins. Details on the techniques have been reported elsewhere.<sup>2</sup> There were 31 patients with null-cell leukemia, eight with T-cell leukemia, and four with B-cell leukemia. All patients were treated with vincristine (1.6 mg per square meter of body-surface area each week in five to six doses), daunorubicin (40 mg per square meter in two to three doses), and prednisone (40 mg per square

# NEJM 1980

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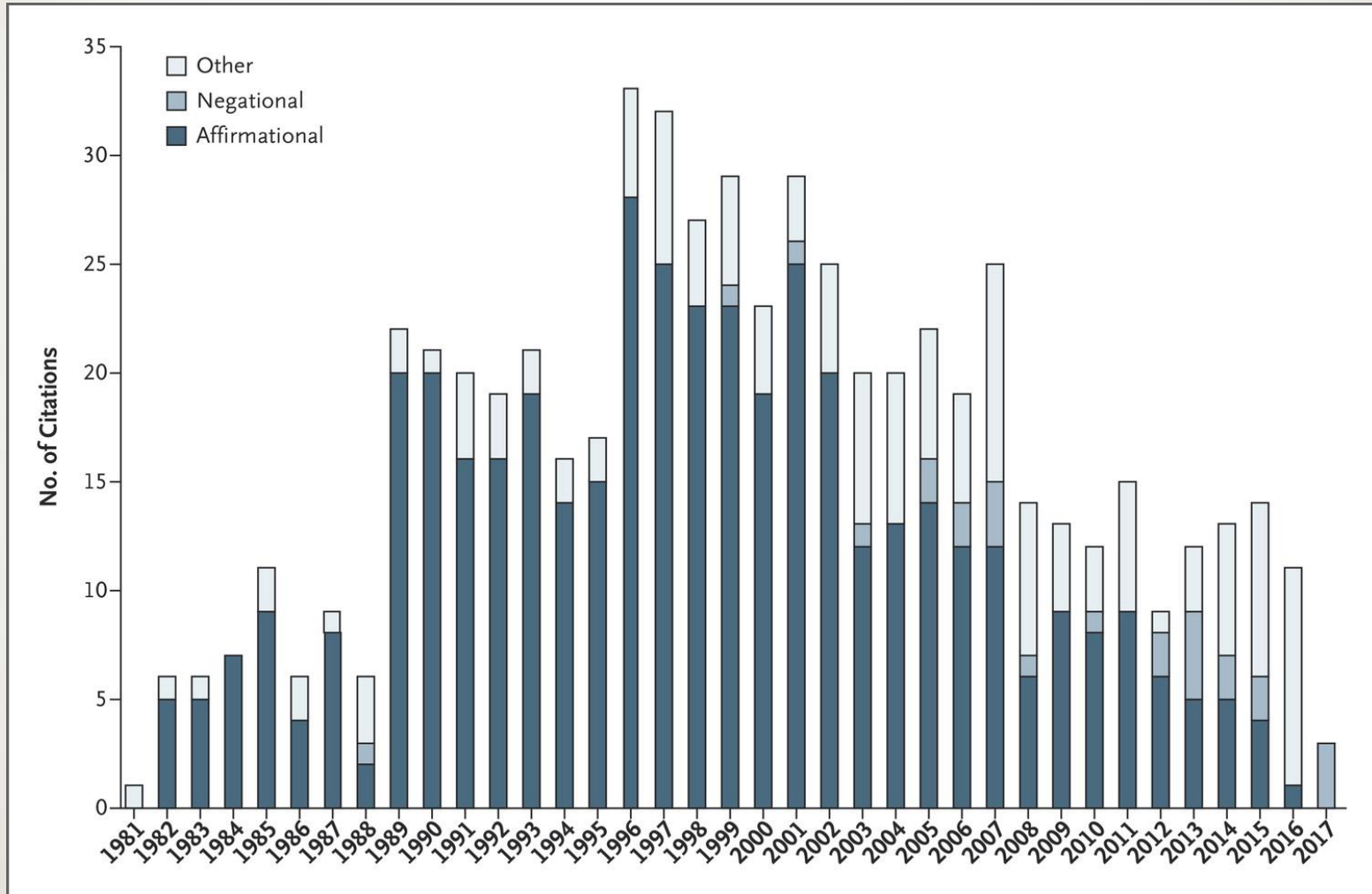
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ADULTS WITH ACUTE LYMPHOBLASTIC LEUKEMIA: EXPERIENCE WITH 42

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# Number and Type of Citations of the 1980 Letter, According to Year.



1996

- American Pain Society “Pain as the 5<sup>th</sup> Vital Sign Campaign”

1998

- Federation of State Medical Boards published "Model Guidelines for the Use of Controlled Substances for the Treatment of Pain."

2003

- *The New York Times* reports tripling of young adults (18-25) abusing opioid pain relievers. DEA and FDA create task force to crack down on internet sales of opioids.

2007

- Maker of OxyContin, Purdue Pharma, plead guilty to “criminal charges that they misled regulators, doctors and patients about the drug’s risk of addiction and its potential to be abused.” Results in a \$600M settlement.

2000+

- Rapid expansion of opioid use in the US

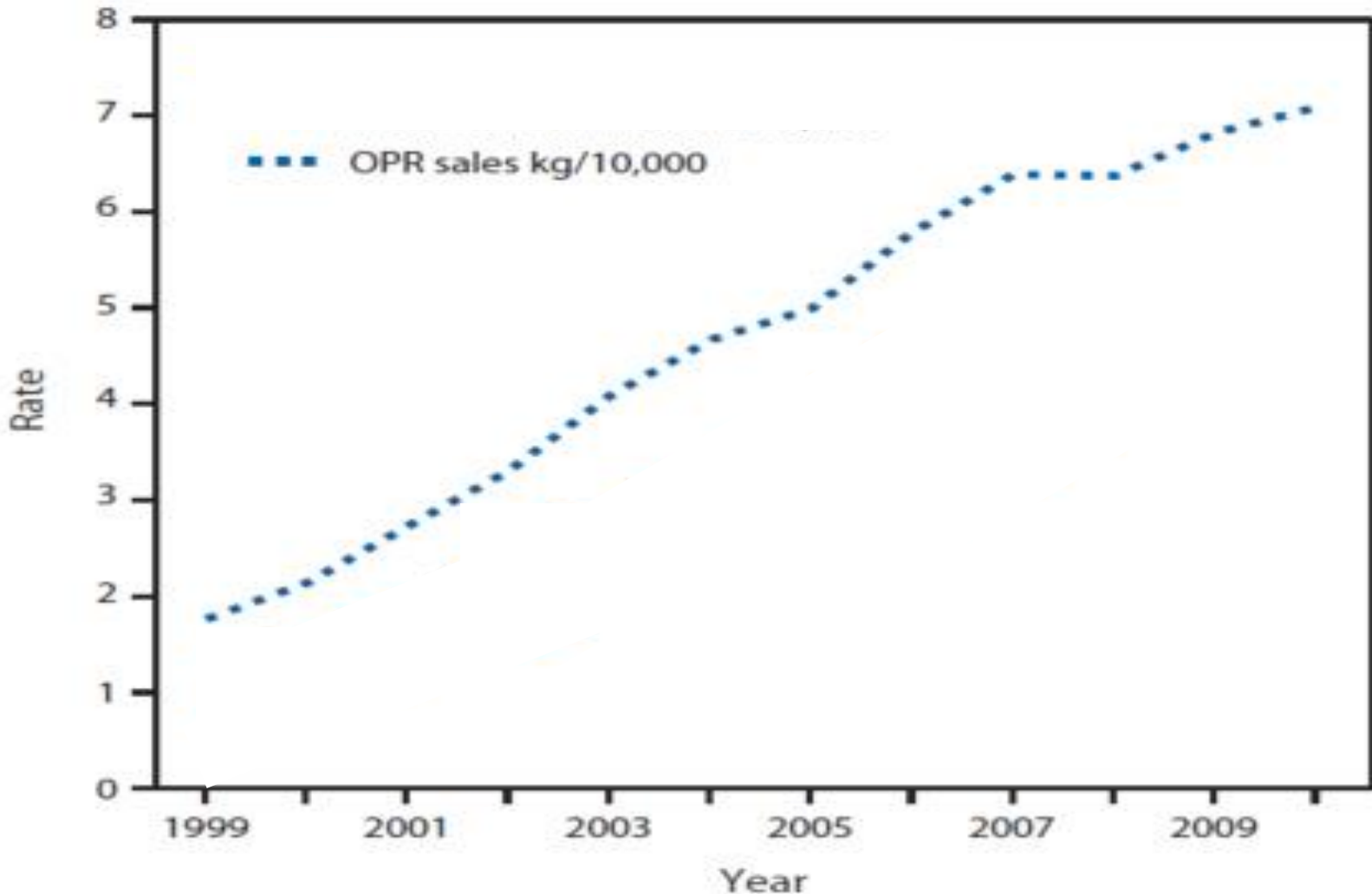
Frakt, Austin. "Painkiller Abuse, a Cyclical Challenge." *The New York Times* 22 Dec. 2014.

# Trends in Opioid Use

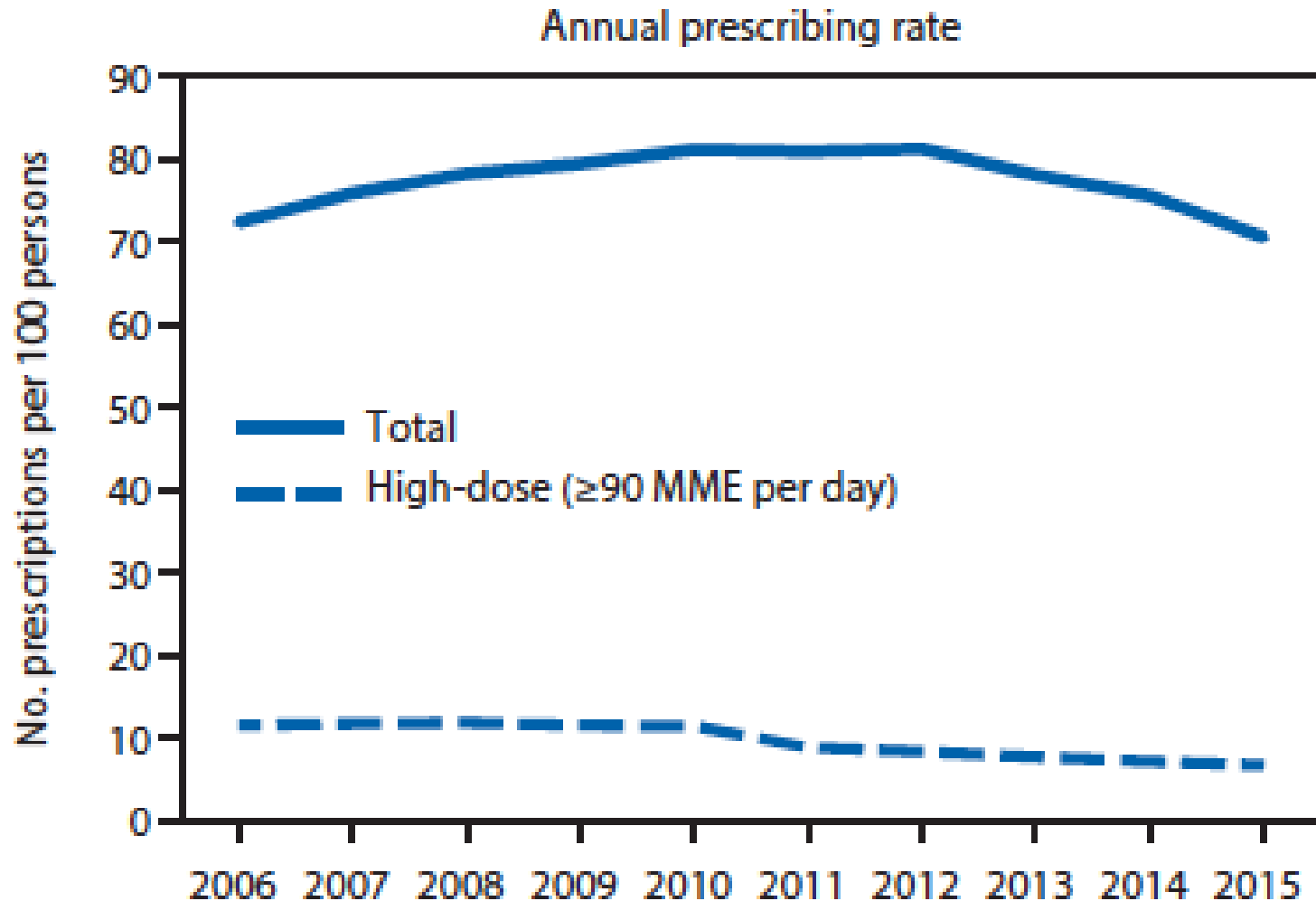




# Opioid Pain Reliever Sales



# Opioid Pain Reliever Prescribing

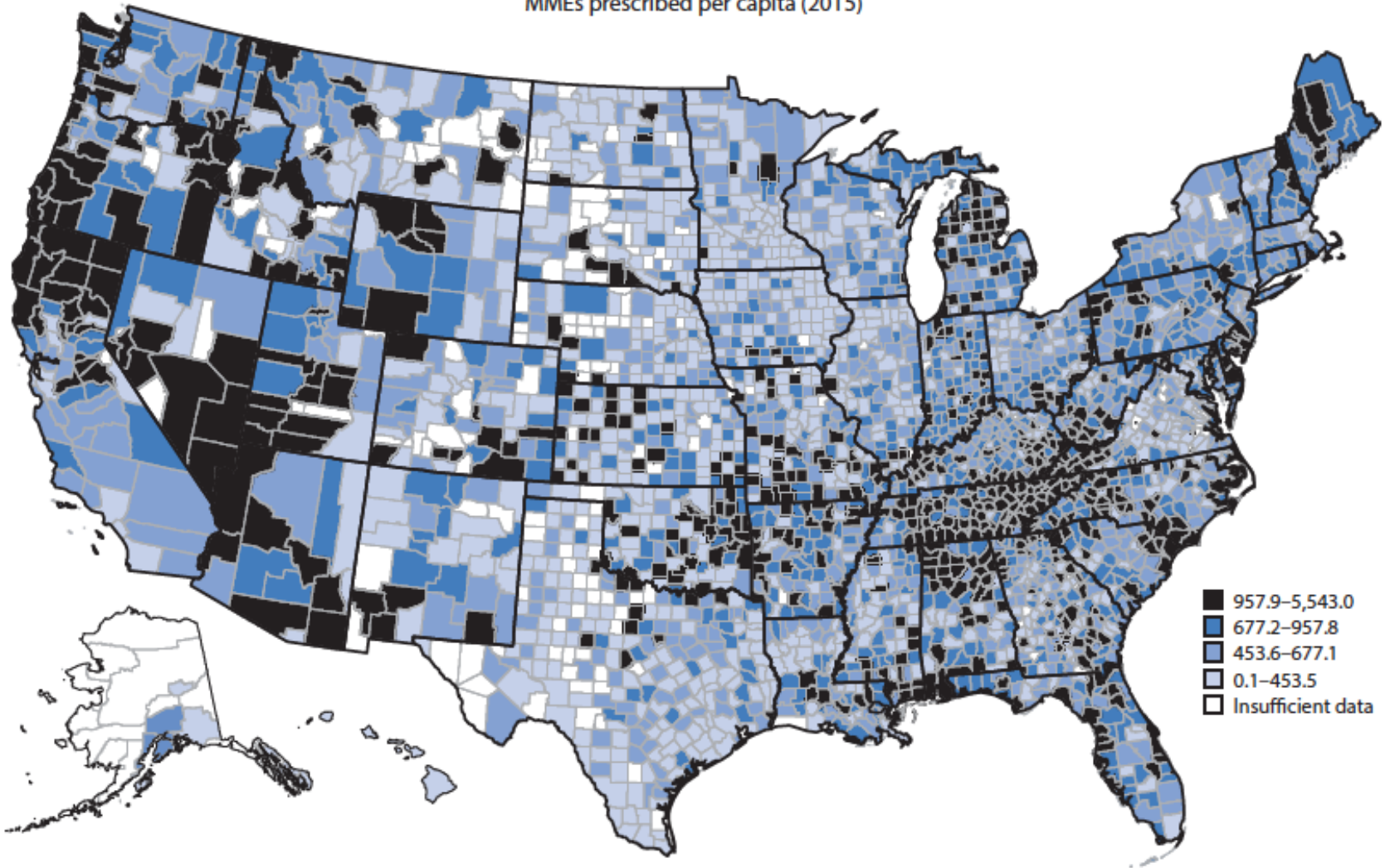


Guy GP, Jr., Zhang K, Bohm MK, Losby J, Lewis B, Young R, et al. Vital Signs: Changes in Opioid Prescribing in the United States, 2006-2015. MMWR Morb Mortal Wkly Rep. 2017;66(26):697-704.

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# Opioid Prescribing, US 2015

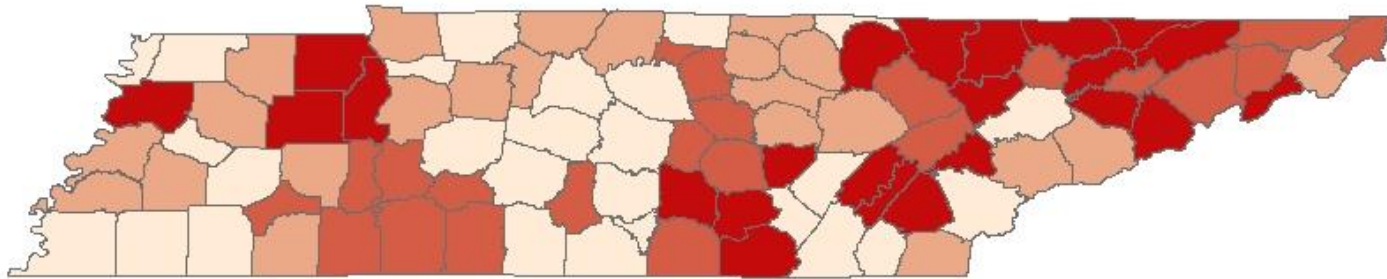
MMEs prescribed per capita (2015)



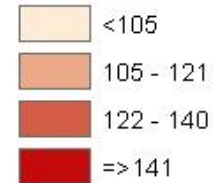
Guy GP, Jr., Zhang K, Bohm MK, Losby J, Lewis B, Young R, et al. Vital Signs: Changes in Opioid Prescribing in the United States, 2006-2015. MMWR Morb Mortal Wkly Rep. 2017;66(26):697-704.

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# Opioid Prescription Rates by County—TN, 2007



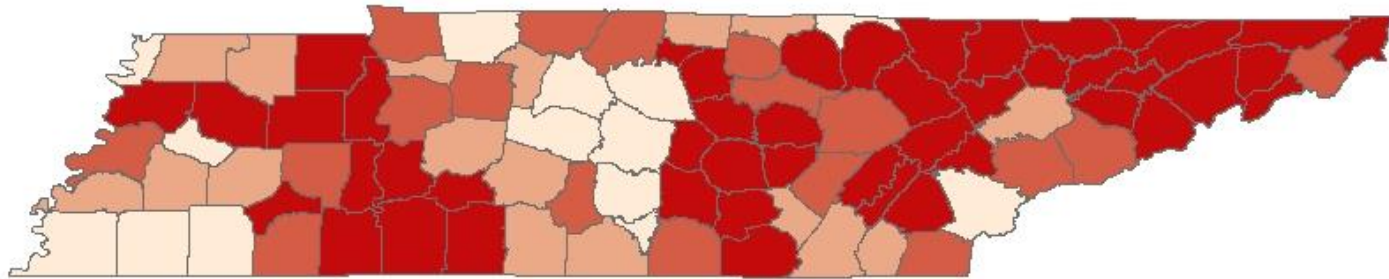
## Prescription Rate per 100 Population



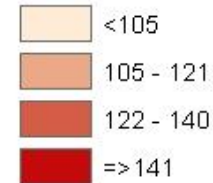
Source: Michael Warren, MD, MPH – Tennessee DOH

Data source: Tennessee Department of Health; Controlled Substance Monitoring Database.

# Opioid Prescription Rates by County—TN, 2008



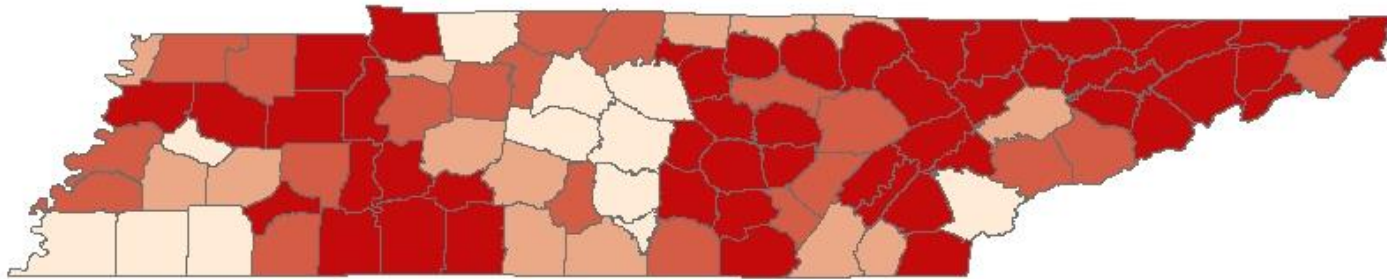
Prescription Rate per 100 Population



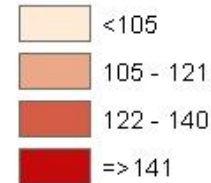
Source: Michael Warren, MD, MPH – Tennessee DOH

Data source: Tennessee Department of Health; Controlled Substance Monitoring Database.

# Opioid Prescription Rates by County—TN, 2009



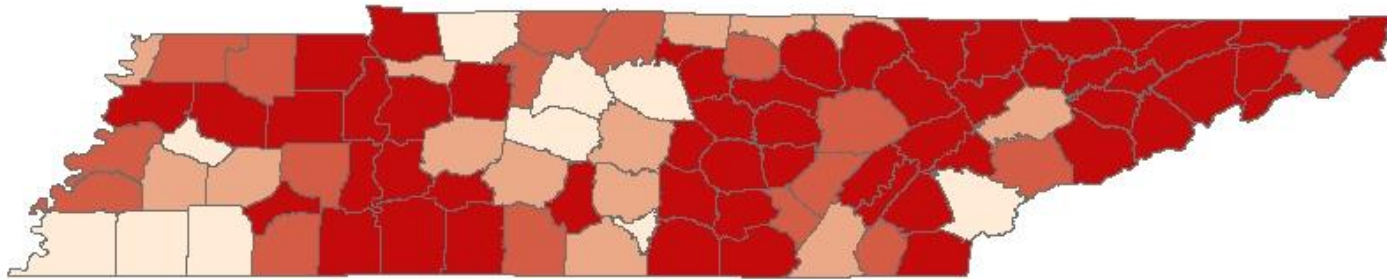
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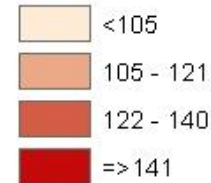
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# Opioid Prescription Rates by County—TN, 2010



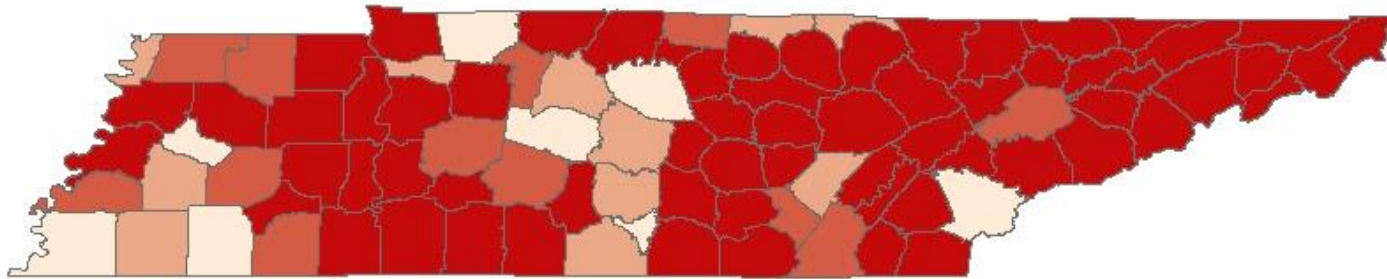
## Prescription Rate per 100 Population



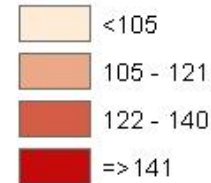
Source: Michael Warren, MD, MPH – Tennessee DOH

Data source: Tennessee Department of Health; Controlled Substance Monitoring Database.

# Opioid Prescription Rates by County—TN, 2011



## Prescription Rate per 100 Population

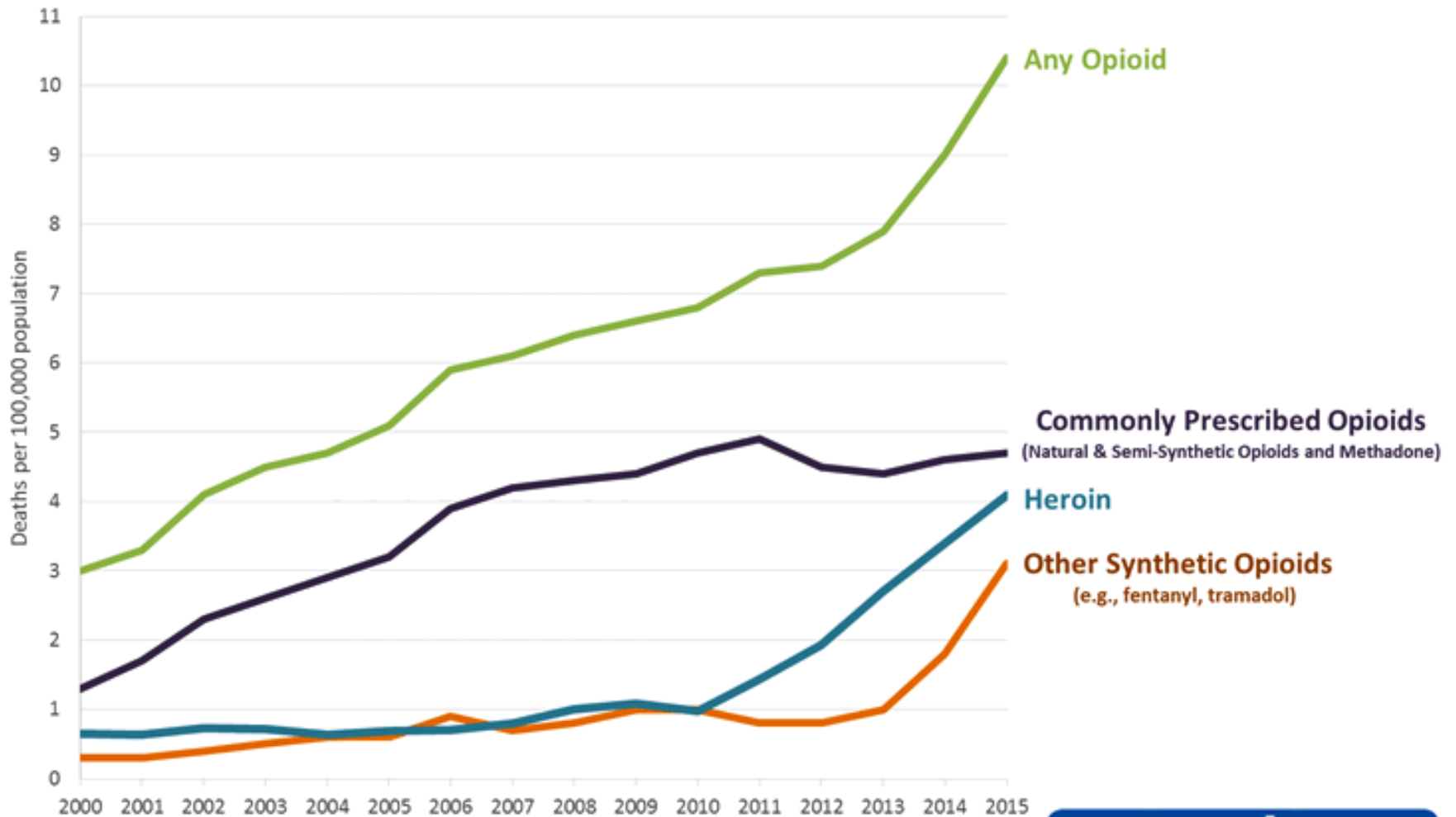


Source: Michael Warren, MD, MPH – Tennessee DOH

Data source: Tennessee Department of Health; Controlled Substance Monitoring Database.



# Opioid Overdoses, US 2000-2015



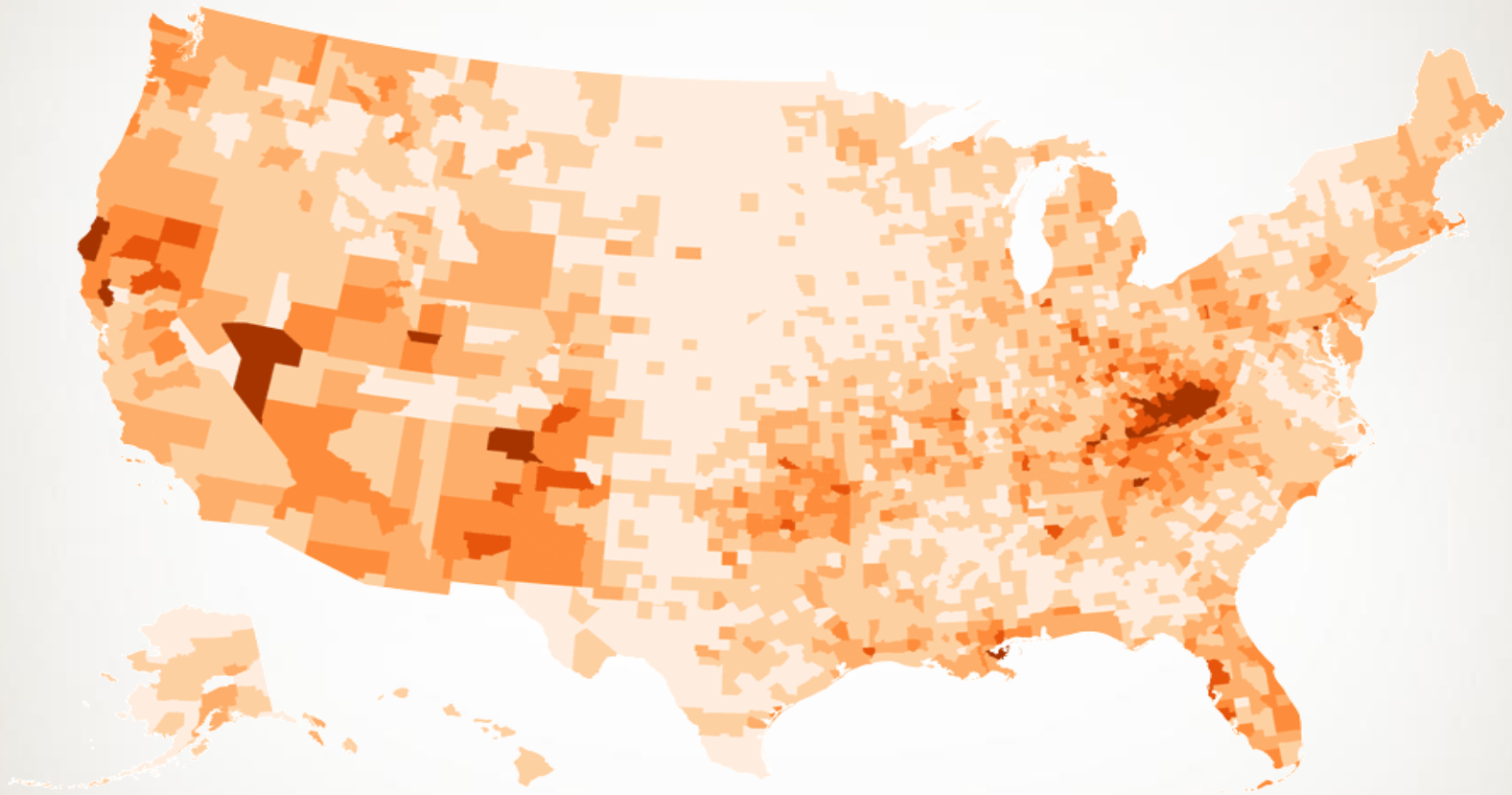
SOURCE: CDC/NCHS, National Vital Statistics System, Mortality. CDC WONDER, Atlanta, GA: US Department of Health and Human Services, CDC; 2016. <https://wonder.cdc.gov/>.

[www.cdc.gov](http://www.cdc.gov)  
Your Source for Credible Health Information

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MEDICAL CENTER

Death rate per 100,000



2002 | US: 23,518 deaths | 8.2 per 100,000

# Opioids

- Prescriptions grew 4-fold over last decade
- More deaths than car accidents
- In 2012, enough OPR were prescribed to give every adult in the US one prescription
- Rising deaths from heroin and synthetic opioids

Source: Centers for Disease Control and Prevention

# Substance Exposure in Pregnancy



# What about Other Drugs?

- Illicit drug use in pregnancy (2015)
  - 7.4% - pregnant women 18 to 25 years old
  - 4.7% - 15-44 years (less than non-pregnant 12.5%)
- Legal drugs in pregnancy
  - 13.6% smoke cigarettes (11.4% in 2014)
  - 9.3% use alcohol (8.8% in 2014)
- 440,000 infants exposed to illicit drugs and alcohol per year
  - Only 5% detected at birth

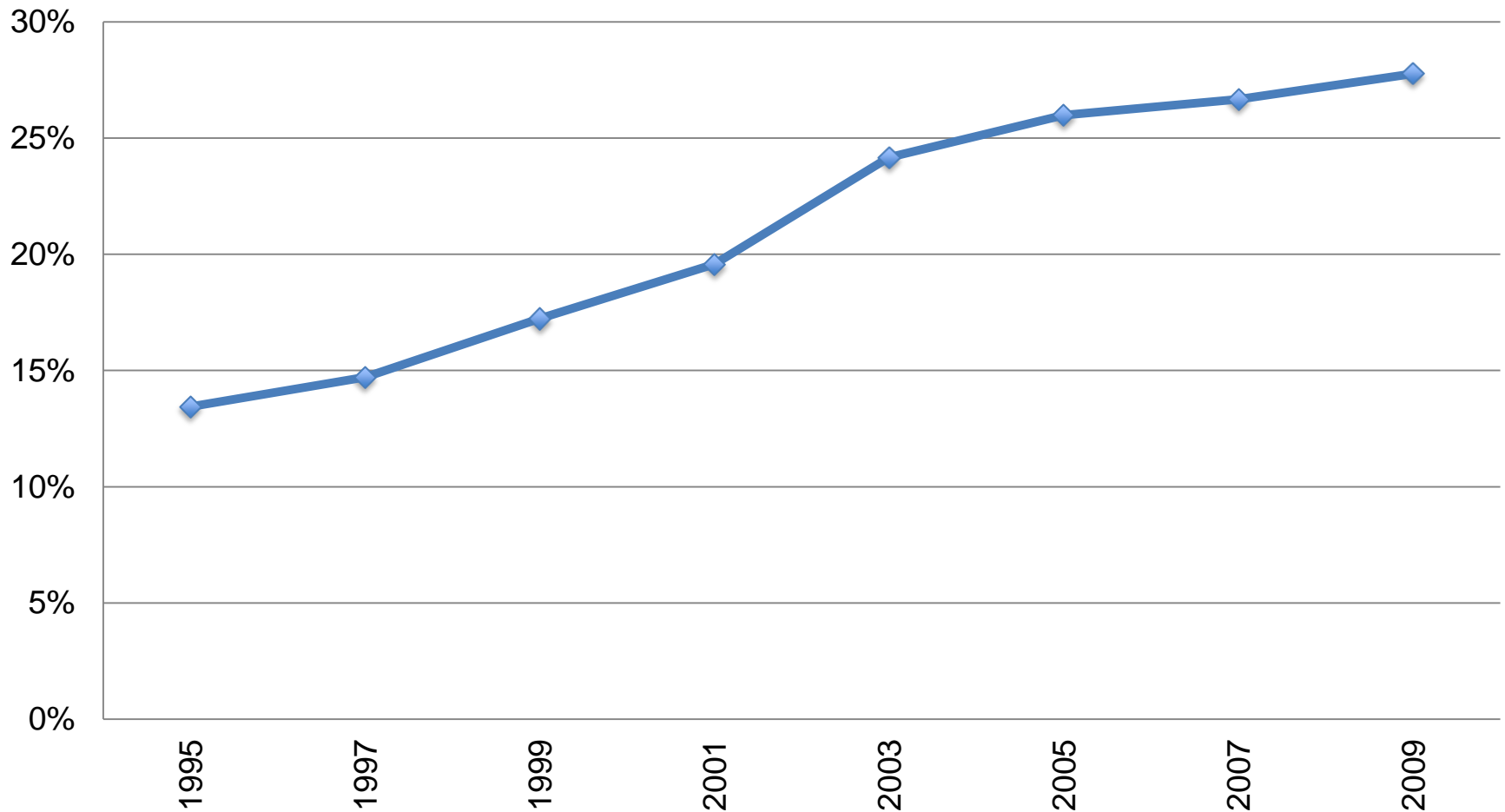
Substance Abuse and Mental Health Services Administration. *Results from the 2015 National Survey on Drug Use and Health: Summary of National Findings*. Rockville, MD: Substance Abuse and Mental Health Services Administration;2016.

Young N, et al. *Substance-Exposed Infants: State Responses to the Problem*. Rockville, MD: Substance Abuse and Mental Health Services Administration;2009.

# Maternal Drug Use

- Commonly occurs with other substances
  - Among pregnant women misusing opioids in last year (compared to those who did not), in the last month:
    - 22.9% used marijuana (versus 2.6%)
    - 23.9% used alcohol (versus 8.1%)
    - 43.5% used tobacco (versus 14.5%)

# Percentage of Women With an Opioid Pain Reliever in the 2nd or 3rd Trimester



Epstein RA, Bobo WV, Martin PR, et al. Increasing pregnancy-related use of prescribed opioid analgesics. *Ann Epidemiol.* Aug 2013;23(8):498-503.

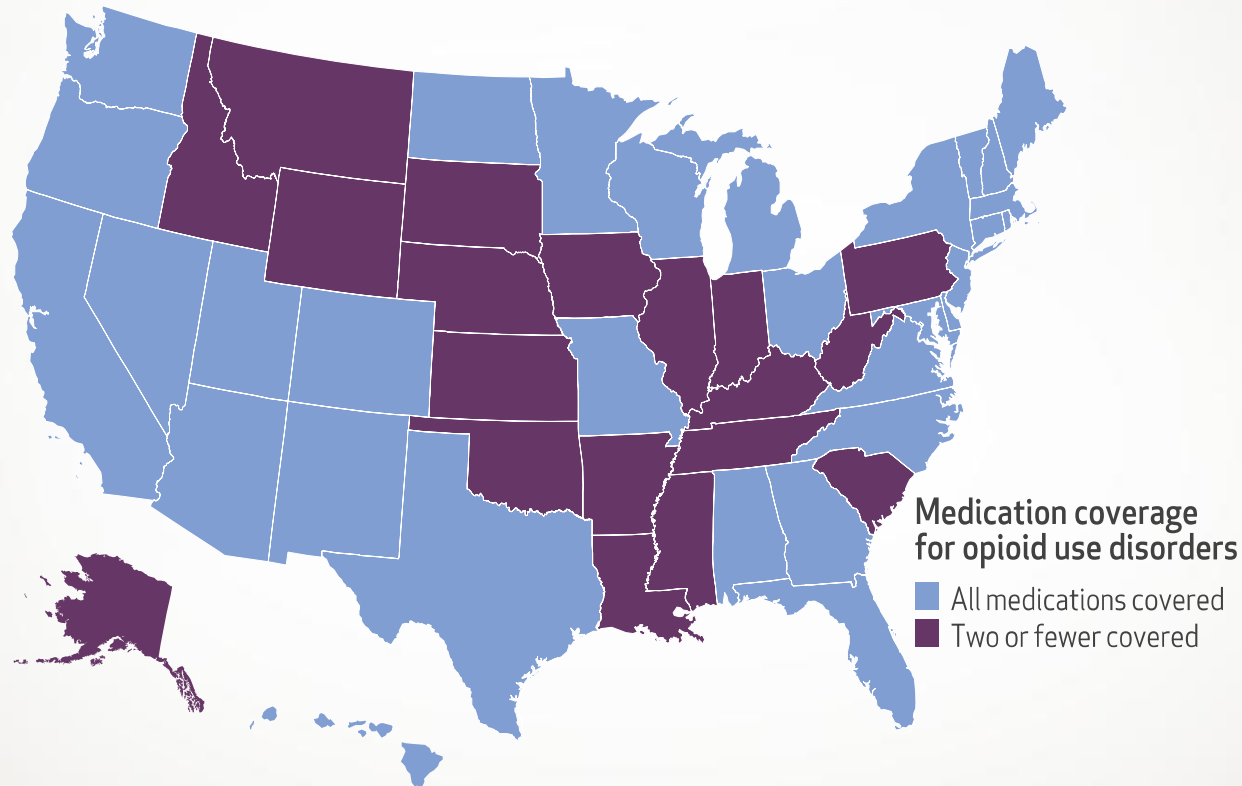
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# Opioid Agonist Therapies

- Buprenorphine and methadone
  - Approved to treat opioid use disorder in pregnancy
  - Mother: Decreased risk of overdose death, relapse, HCV, HIV
  - Baby: More likely to go to term, higher birthweights
- Risk of NAS

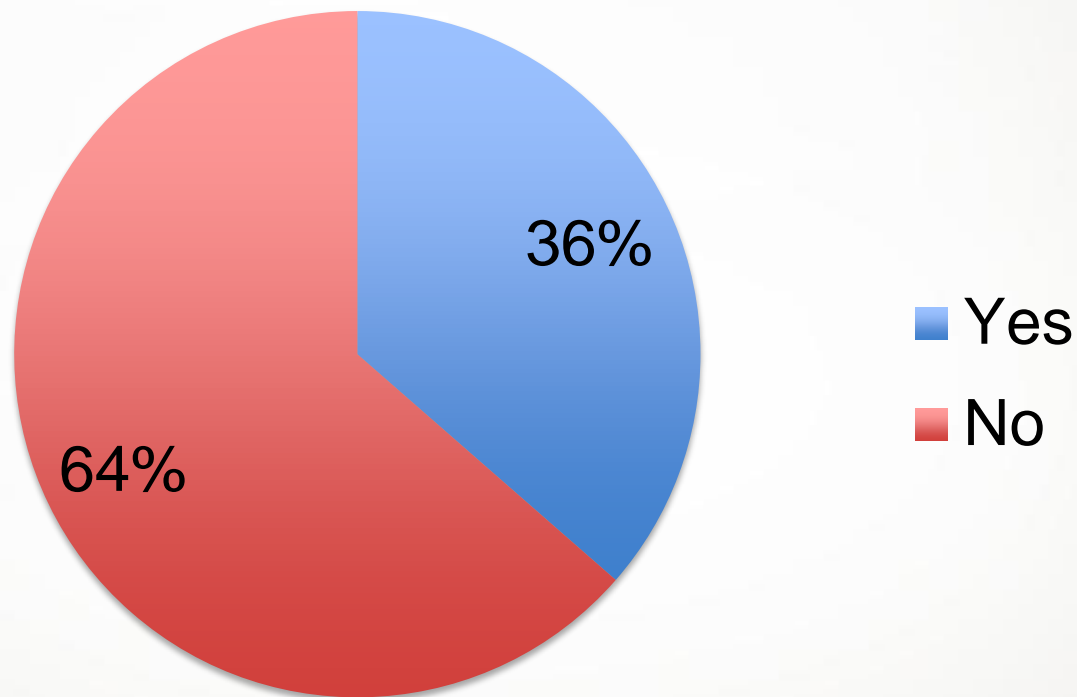


# State Medicaid variability in coverage of Opioid Agonist Therapies



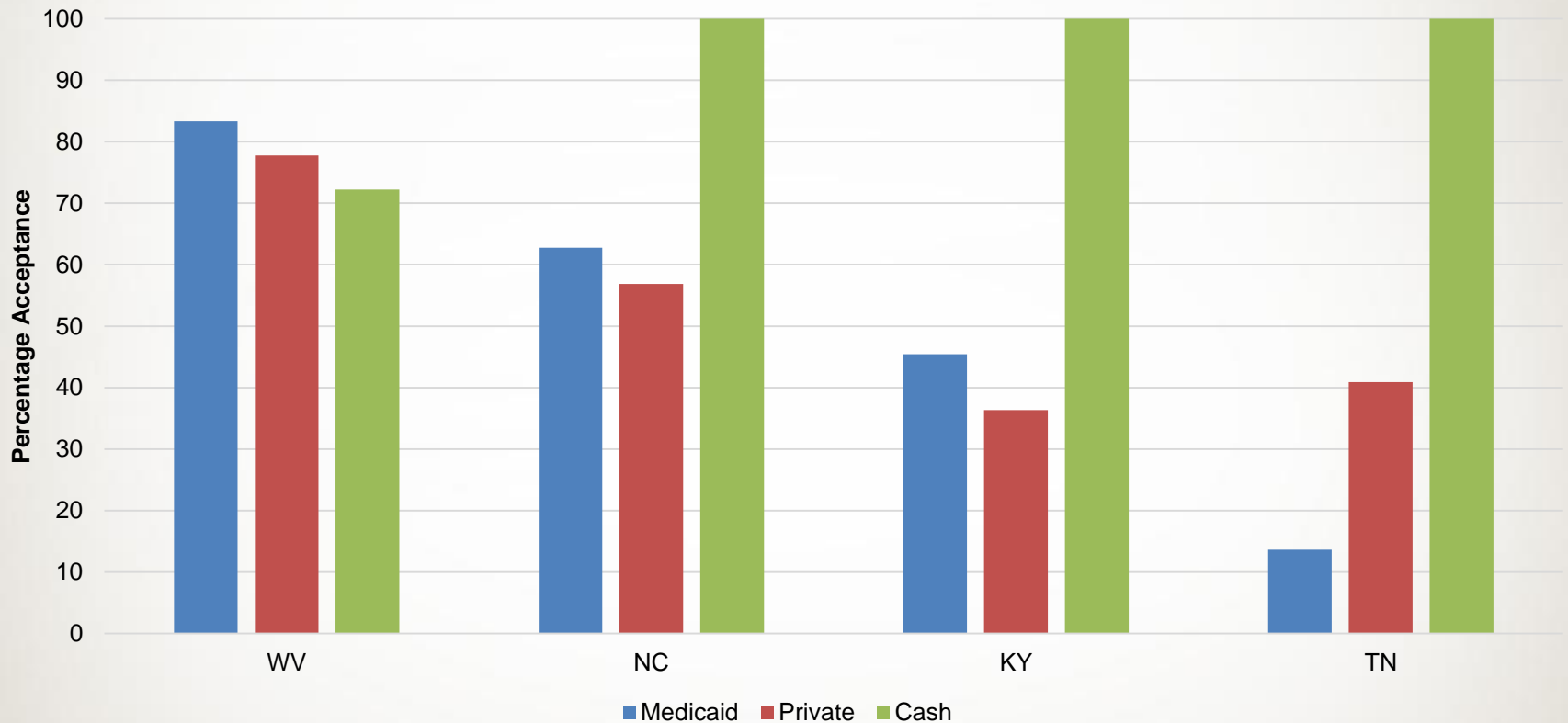
Grogan CM, et al. Survey Highlights Differences In Medicaid Coverage For Substance Use Treatment And Opioid Use Disorder Medications. *Health affairs*. 2016;35(12):2289-2296

# Pregnant Women in Treatment Getting OAT



Analysis of the Substance Abuse and Mental Health Administration's Treatment Episode Discharge Dataset. Sample: Pregnant women treated for opioid use disorder in FL, KY, MA, MI, MO, NY, NC, TN, WA, WV; 2013.

# Percentage of OTPs and Buprenorphine Providers Accepting Insurance



\*Medicaid:  $p < 0.001$ ; Private Insurance  $p = 0.037$ ; Cash Payments  $< 0.001$   
Patrick SW, Buntin MB, Cooper WO. Barriers to Accessing Opioid Agonist Therapies. *Under Review.*



# What is NAS?

- A withdrawal syndrome experienced by drug exposed newborns after birth
- Generally follows opioid exposure, though other drugs have been implicated
  - Alcohol, benzodiazepines (valium, etc.), barbiturates (phenobarbital, etc.)
- 40-80% of heroin and methadone exposed newborns develop NAS
  - ~5% of those exposed to opioid pain relievers



© © Ru

# Clinical Features of NAS

- GI
  - Poor feeding/vomiting/loose stools
    - Leading to dehydration and poor weight gain
- CNS
  - Tremors/hypertonia
  - Irritability/decreased sleep
  - Exaggerated reflexes (e.g. moro)
  - Seizures
- Autonomic activation
  - Tachypnea
  - Yawning
  - Dilated pupils

SYSTEM	SIGN	SCORE			
Central nervous system disturbances	High pitch/excessive cry	2	Gastrointestinal disturbances	Excessive sucking	1
	Continuous (high pitched) cry	3		Poor feeding*	2
	Sleeps less than 1 hour after feeds	3		Regurgitation*	2
	Sleeps less than 2 hours after feeds	2		Projectile vomiting	3
	Sleeps less than 3 hours after feeds	1		Loose stools	2
				Watery stools	3
			Respiratory/vasomotor disturbances	Sweating	1
	Hyperactive Moro reflex	2		Fever 37.3 to 38.3°C	1
	Markedly hyperactive Moro reflex	3		Fever 38.4°C and above	2
	Mild tremors disturbed*	1		Frequent yawning (> 3 – 4 in ½ hr)	1
	Mod/severe tremors disturbed*	2		Mottling	1
	Mild tremors undisturbed*	3		Nasal stuffiness	1
	Mod/severe tremors undisturbed*	4		Sneezing (> 3 – 4 in ½ hr)	2
	Increased muscle tone	2		Nasal flaring	1
	Excoriation*	1		Respiratory rate > 60/min	1
	Myoclonic jerks	3		Respiratory rate > 60/min and retractions	2
	Generalised convulsions	5			

Zimmermann-Baer U. Finnegan neonatal abstinence scoring system: normal values for first 3 days and weeks 5-6 in non-addicted infants. *Addiction* (Abingdon, England). 2010;105(3):524-528.



# NAS Scoring Issues

- Scoring Tools
  - Have not undergone rigorous instrument development
  - Significant inter-rater reliability challenges
- Scoring Cut-point Threshold
- Scoring Context
  - Never tested in preterm infants
  - Tested on pure opioid-exposed population
  - Currently poly-substance exposure is the norm
  - Finnegan paper = average LOS was 6 days . . .

Credit: Madge Buus-Frank

# Opioid Prescribing and NAS

Patrick SW, Dudley J, Martin PR, et al. Prescription opioid epidemic and infant outcomes. *Pediatrics*. 2015;135(5):842-850.

# Predicting NAS

- Prescription opioids include
  - Short-acting (e.g. hydrocodone)
  - Long-acting (e.g. oxymorphone ER)
  - Maintenance (e.g. methadone, buprenorphine)
- Factors associated with developing NAS unclear
  - Dose (only evaluated for maintenance drugs)
  - Tobacco
  - Selective Serotonin Reuptake Inhibitor
- Data from Tennessee Medicaid, 2009-2011

# Characteristics of Mothers

	No Opioid	Any Opioid Use	
	%	%	p-value
	N = 80,675	N = 31,354	
<b>Maternal race</b>			
African American			
Caucasian			
Other			
<b>Psychiatric Diagnoses</b>			
Depression			
Anxiety			
<b>Other Exposures</b>			
Tobacco			
SSRI (at delivery)			

# Characteristics of Mothers

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<b>Maternal race</b>			<0.001
African American	32.2%	26.7%	
Caucasian	65.8%	72.4%	
Other	1.6%	0.6%	
<b>Psychiatric Diagnoses</b>			
Depression	2.7%	5.3%	<0.001
Anxiety	1.6%	4.3%	<0.001
<b>Other Exposures</b>			
Tobacco	25.8%	41.8%	<0.001
SSRI (at delivery)	1.9%	4.3%	<0.001

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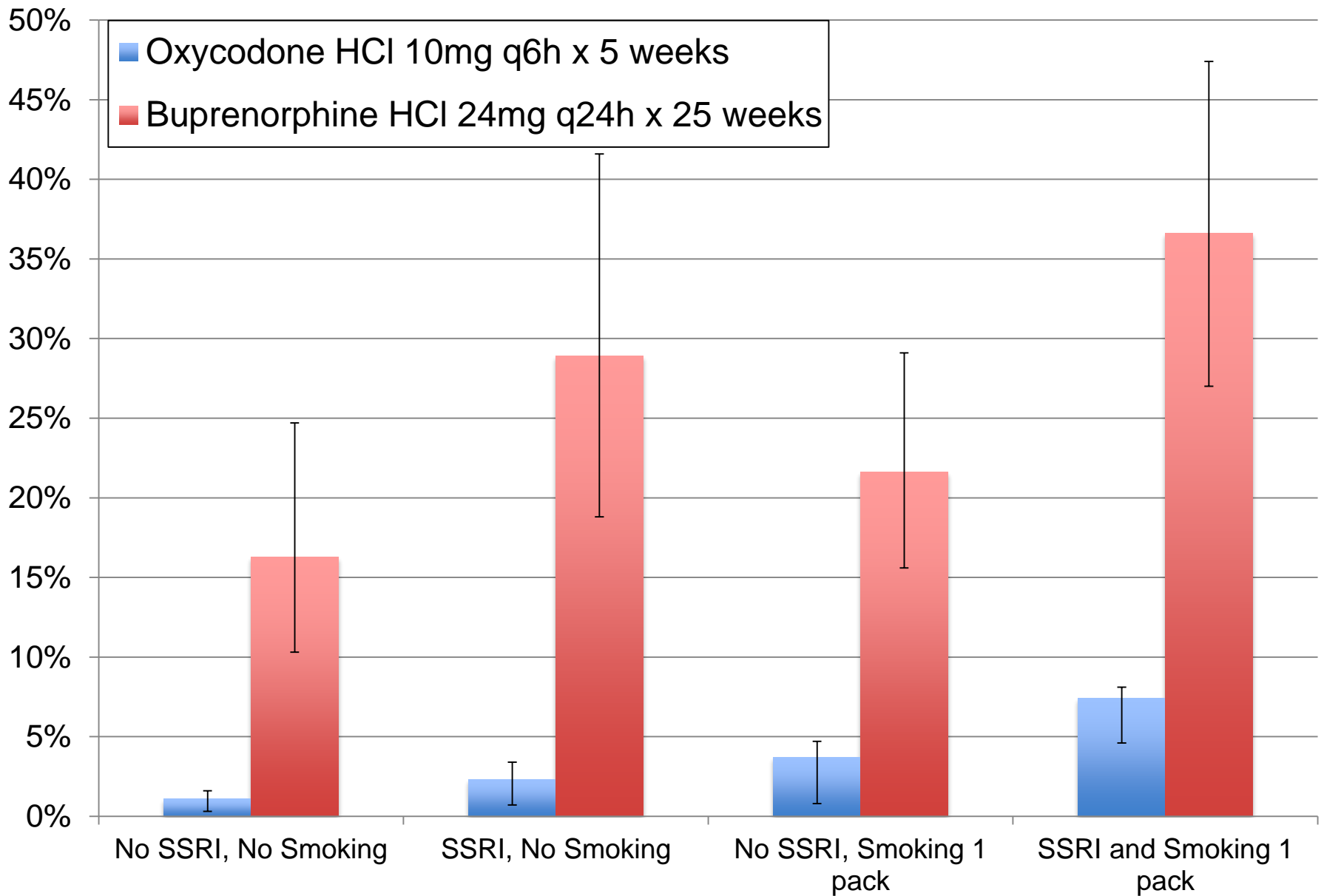
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\*Results shown after adjustment for maternal age, education, race, infant gender, birthweight, year of birth, interaction drug type and cumulative opioid exposure (0.0002), interaction of number of cigarettes smoked per day and cumulative opioid exposure ( $p < 0.001$ ), drug type and number of cigarettes smoked per day.

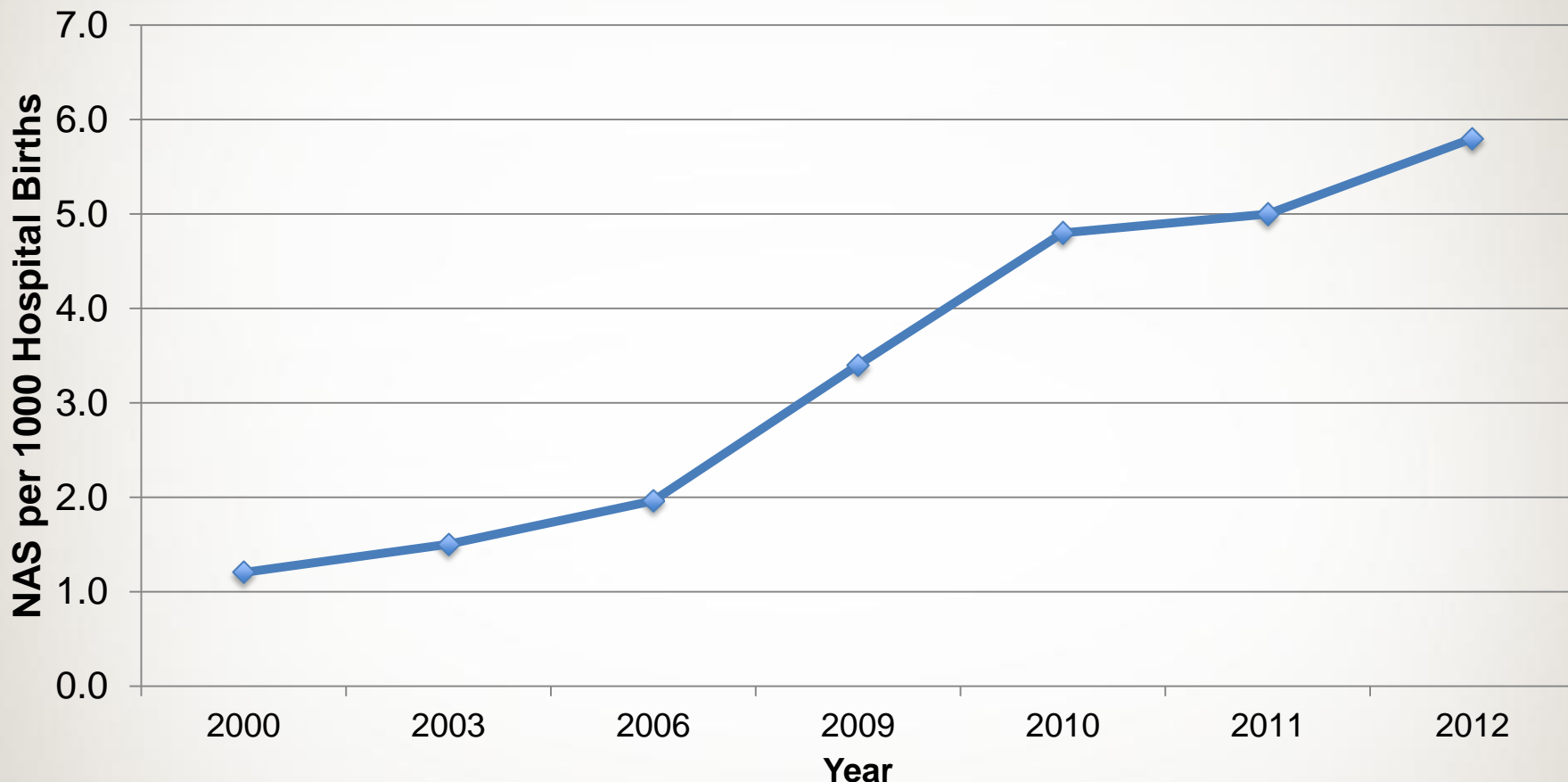
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# Next Steps

- Medicaid insures ~80% of infants with NAS
  - States well-positioned to minimize unnecessary opioid use in pregnancy
- The AAP recommends observation of opioid exposed infants for 4-7 days
  - Low-risk discharged sooner?
  - High-risk closer observation?
- Role of smoking cessation

# More Opioids = More NAS?

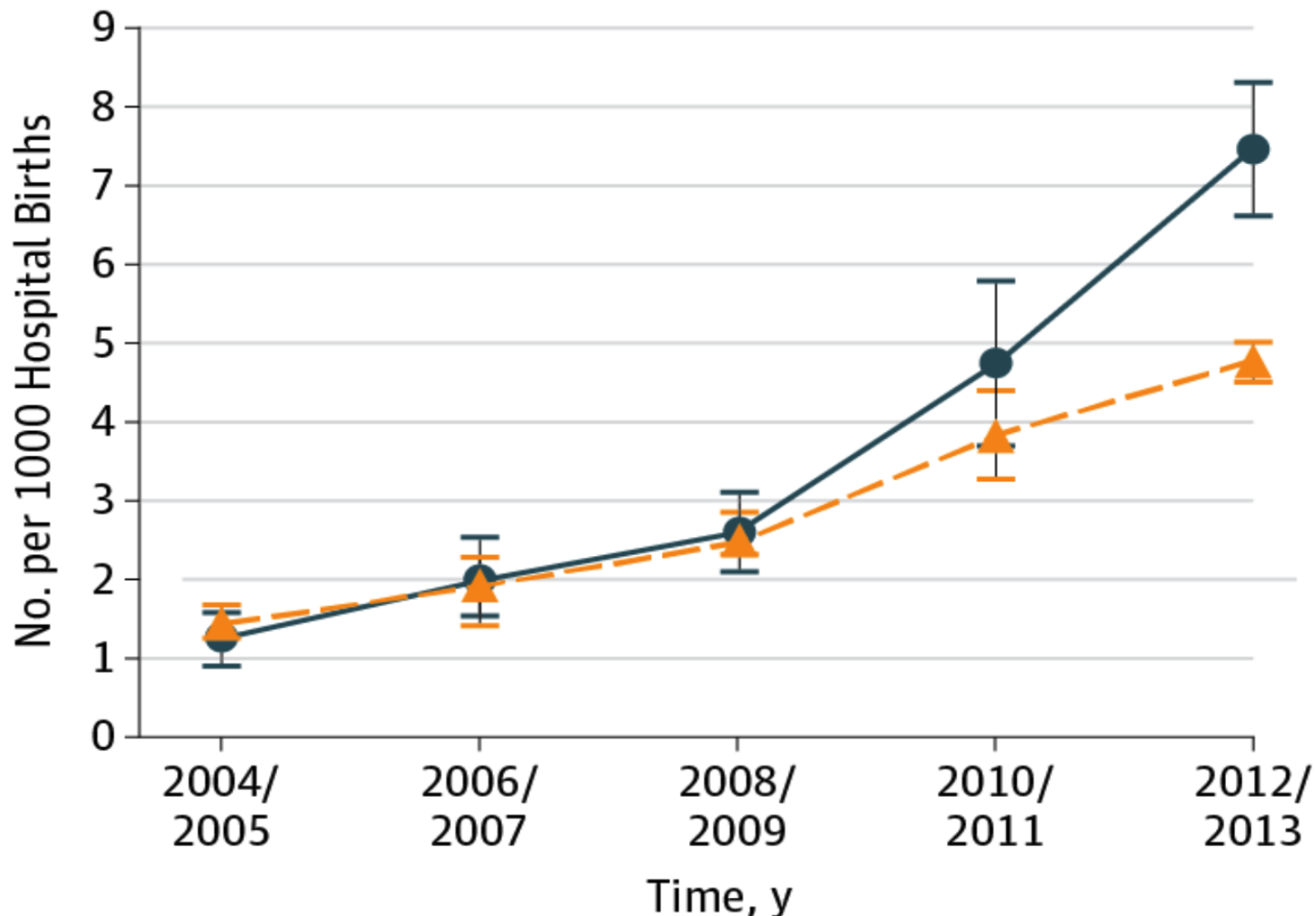
# Incidence of NAS in the US, 2000-2012



Patrick SW, et. al. Neonatal Abstinence Syndrome and Associated Healthcare Expenditures – United States, 2000-2009. *JAMA*. 2012 May 9;307(18):1934-40.

Patrick SW, Davis MM, Lehman CU, Cooper WO. Increasing incidence and geographic distribution of neonatal abstinence syndrome: United States 2009 to 2012. *J Perinatol*. Apr 30 2015.

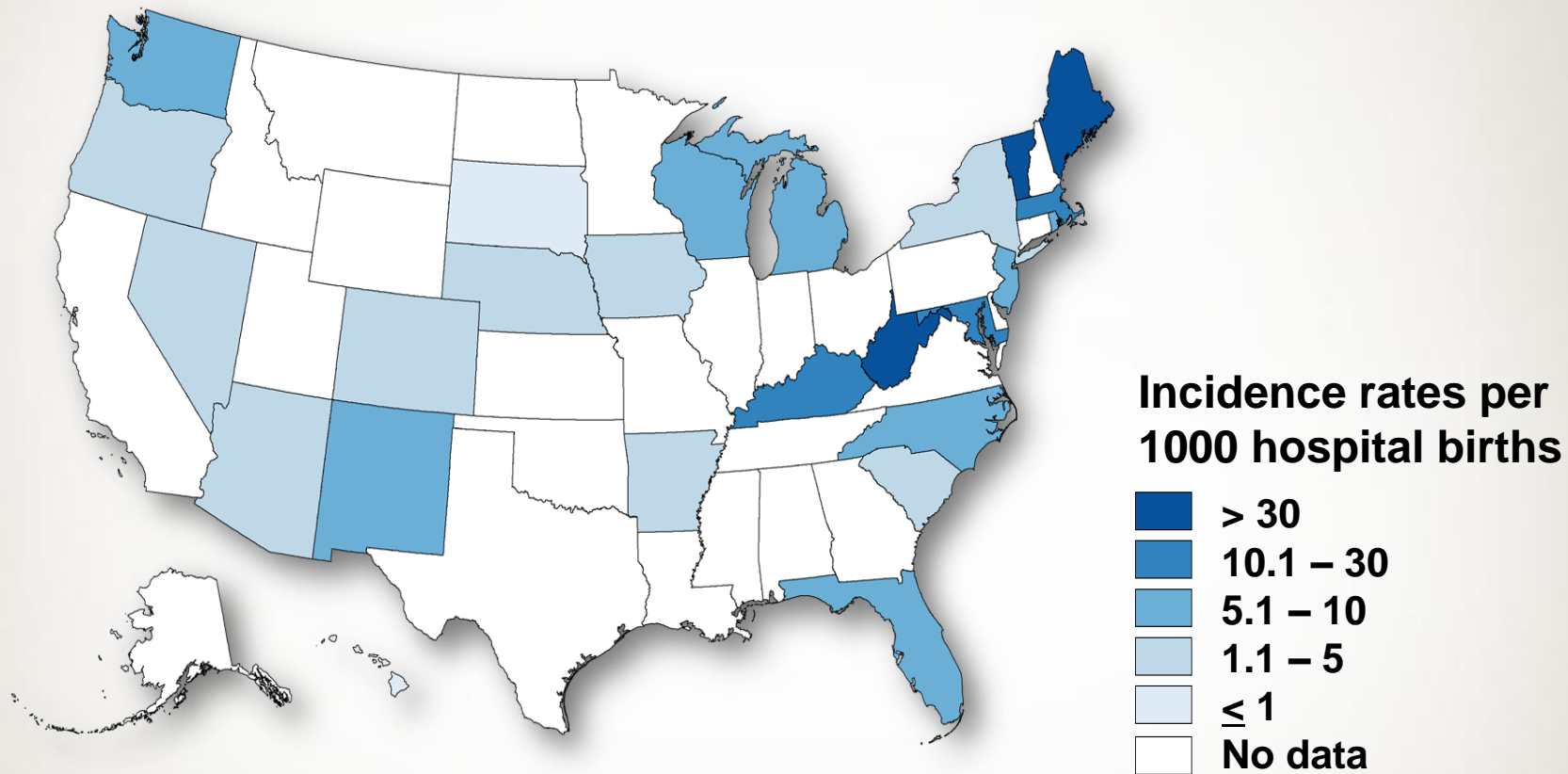
# Neonatal Abstinence Syndrome in Rural vs. Urban Communities



Villapiano NLC, Winkelman TNA, Kozhimannil KB, Davis MM, Patrick SW. Rural - Urban Differences in Neonatal Abstinence Syndrome and Maternal Opioid Use, 2004-2013. JAMA Pediatrics. 2016 Dec 12.

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# NAS in 28 US States, 2013



Ko JY, Patrick SW, Tong VT, Patel R, Lind JN, Barfield WD. Incidence of Neonatal Abstinence Syndrome - 28 States, 1999-2013. MMWR Morb Mortal Wkly Rep. 2016;65(31):799-802.

# Mean LOS and Hospital Charges for NAS, 2009-2012

	2009	2010	2011	2012
<b>Mean LOS (day)</b>	22.7	22.9	22.8	23.0
<b>Mean Charges* (2012 US\$)</b>				

\* $p < 0.001$

Patrick SW, Davis MM, Lehmann CU, Cooper WO. Increasing incidence and geographic distribution of neonatal abstinence syndrome: United States 2009 to 2012. *J Perinatol.* 2015;35(8):650-655.

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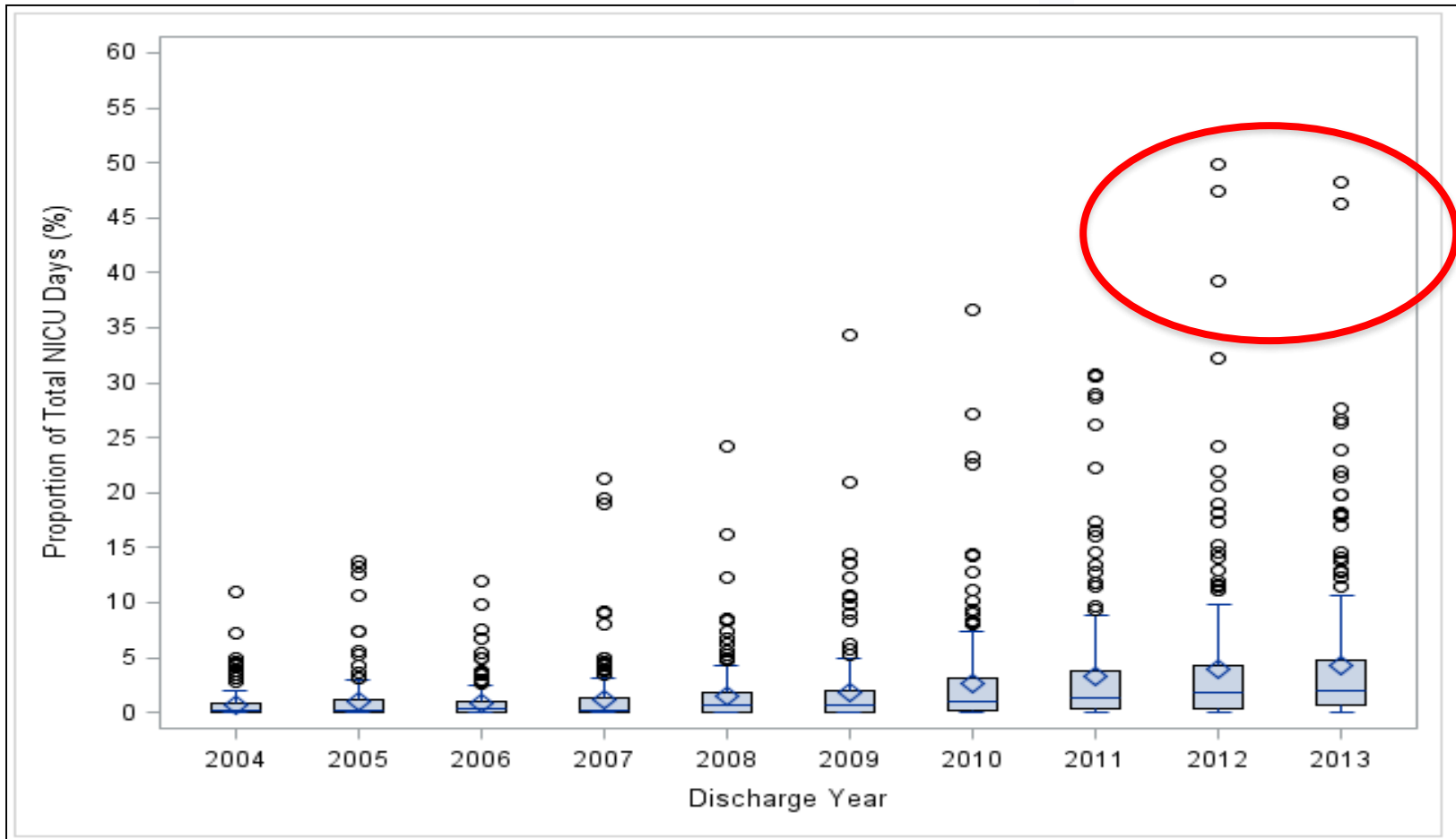
	2009	2010	2011	2012
<b>Mean LOS (day)</b>	22.7	22.9	22.8	23.0
<b>Mean Charges* (2012 US\$)</b>	\$75,700	\$80,500	\$87,700	\$93,400

\*p<0.001

Patrick SW, Davis MM, Lehmann CU, Cooper WO. Increasing incidence and geographic distribution of neonatal abstinence syndrome: United States 2009 to 2012. *J Perinatol.* 2015;35(8):650-655.



# Proportion of NICU Days, By NICU (N=299)



Tolia VN, Patrick SW, Bennett MM, et al. Increasing Incidence of the Neonatal Abstinence Syndrome in U.S. Neonatal ICUs. *N Engl J Med.* 2015;372(22):2118-2126.

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# Total Hospital Charges for NAS, 2009-2012

	2009	2010	2011	2012
<b>Medicaid*</b>	\$560M	\$870M	\$900M	\$1.2B
<b>Private Payer*</b>				
<b>Self Pay*</b>				
<b>Other Payer*</b>				
<b>Total Charges*</b>				

\*p<0.001

Patrick SW, Davis MM, Lehmann CU, Cooper WO. Increasing incidence and geographic distribution of neonatal abstinence syndrome: United States 2009 to 2012. *J Perinatol.* 2015;35(8):650-655.

# Total Hospital Charges for NAS, 2009-2012

	2009	2010	2011	2012
<b>Medicaid*</b>	\$560M	\$870M	\$900M	\$1.2B
<b>Private Payer*</b>	\$130M	\$170M	\$210M	\$200M
<b>Self Pay*</b>	\$20M	\$40M	\$30M	\$40M
<b>Other Payer*</b>	\$14M	\$30M	\$30M	\$30M
<b>Total Charges*</b>	<b>\$730M</b>	<b>\$1.1B</b>	<b>\$1.2B</b>	<b>\$1.5B</b>

\*p<0.001

Patrick SW, Davis MM, Lehmann CU, Cooper WO. Increasing incidence and geographic distribution of neonatal abstinence syndrome: United States 2009 to 2012. *J Perinatol.* 2015;35(8):650-655.

# Targets, Emerging Strategies and Issues

# Hospital Variability

- There remain significant inter and intra-hospital variation in treatment and outcomes for NAS
- Recent study of US children's hospitals:
  - Only 5/14 used the same pharmacotherapy >80% of the time
  - Two-fold differences in risk-adjusted length of stay
- Large international quality improvement collaborative of 199 hospitals
  - 44.8% had a policy to standardize scoring
  - 48.6% had a policy on breastfeeding a substance-exposed infant
  - 68.0% had a policy on pharmacologic treatment of NAS

Patrick SW, Kaplan HC, Passarella M, Davis MM, Lorch SA. Variation in treatment of neonatal abstinence syndrome in US Children's Hospitals, 2004-2011. *J Perinatol.* 2014.

Patrick SW, Schumacher RE, Horbar JD, et al. Improving Care for Neonatal Abstinence Syndrome. *Pediatrics.* 2016;137(5).

# Standardizing Care Works

- Ohio perinatal collaborative, multicenter cohort
  - Protocol driven weans vs. no protocol - with shorter LOT (17.7 vs. 32.1 days,  $p < 0.001$ )
- Vermont Oxford Network NAS collaborative 2013-2015
  - Participating hospitals, care standardized by protocol/policy development
  - Shortened LOT (16 -> 15,  $p = 0.02$ ) and LOS (21 -> 19,  $p = 0.002$ )
  - Hospitals with protocols/policies on infant scoring lowest LOS -3.1 days (95%CI -4.9, -1.4)

Hall ES, Wexelblatt SL, Crowley M, et al. A multicenter cohort study of treatments and hospital outcomes in neonatal abstinence syndrome. *Pediatrics*. 2014;134(2):e527-534.

Patrick SW, Schumacher RE, Horbar JD, et al. Improving Care for Neonatal Abstinence Syndrome. *Pediatrics*. 2016;137(5).

# SAMHSA Guidelines this Fall

- Dual purpose:
  - To increase the number of providers who can offer care to women with OUD who are pregnant and to their infants
  - To standardize this care throughout the United States
- Exhaustive literature review, RAND RAM
- <https://www.regulations.gov/document?D=SAMHSA-2016-0002-0001>

# Emerging issues



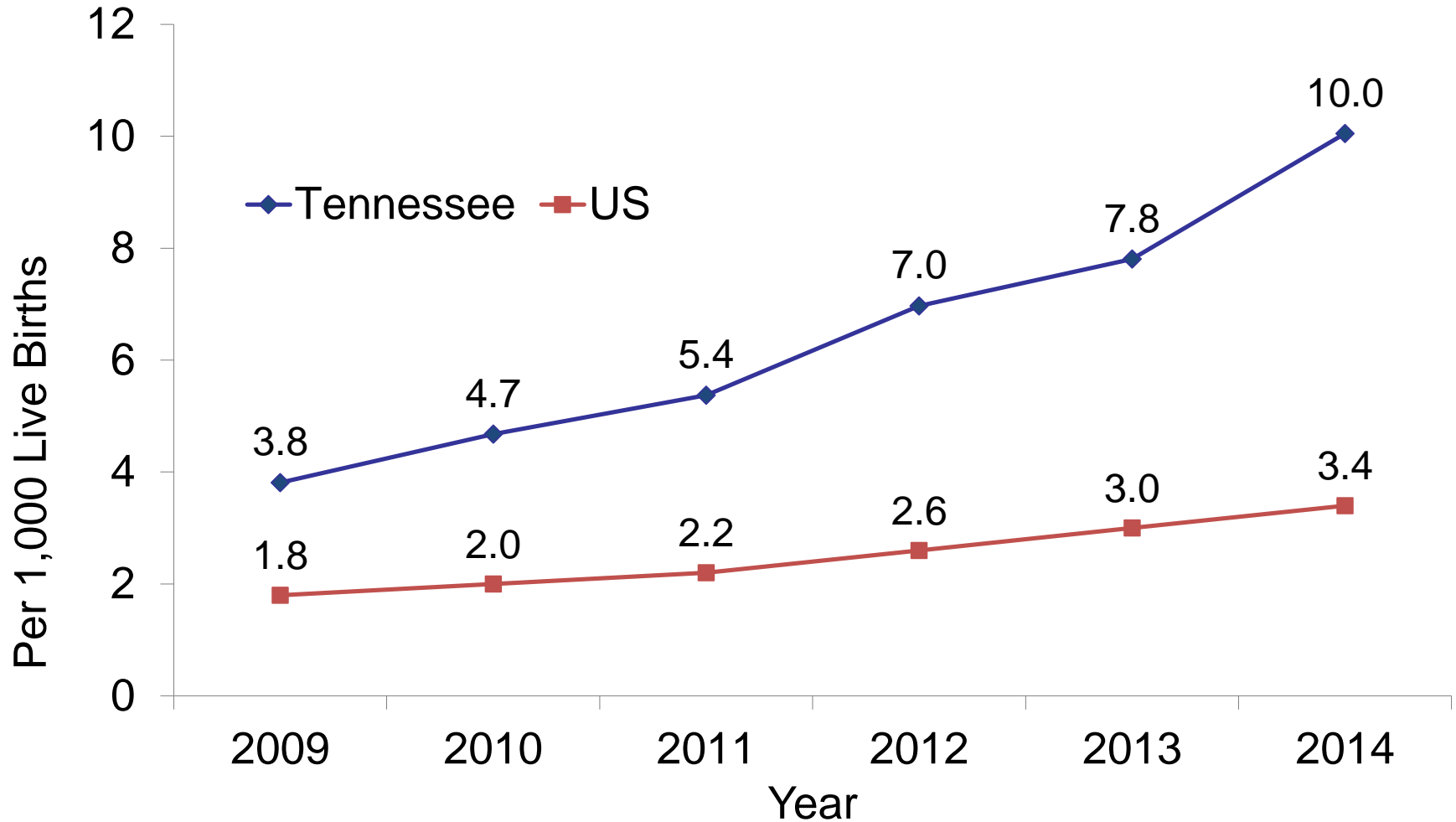
# Rooming In

- Rooming in = creating an environment where moms/babies can stay together
- Culture differences between NICU, newborn nursery general inpatient wards?
- NICU environment conducive to withdrawal?
  - Loud
  - Open bay
  - Bright

# Breastfeeding

- Breastfeeding safe and effective
  - Promotes bonding
  - Very little OAT medications in breastmilk
    - Recent blackbox warning for codeine, tramadol
  - Reduces LOS for NAS
  - Clear exclusion – HIV, HCV with cracked/bleeding nipples
- Academy of Breastfeeding Medicine
  - Appropriate: >90 days in treatment
  - Inappropriate: Active illicit use
  - Maybe: >30 days in treatment

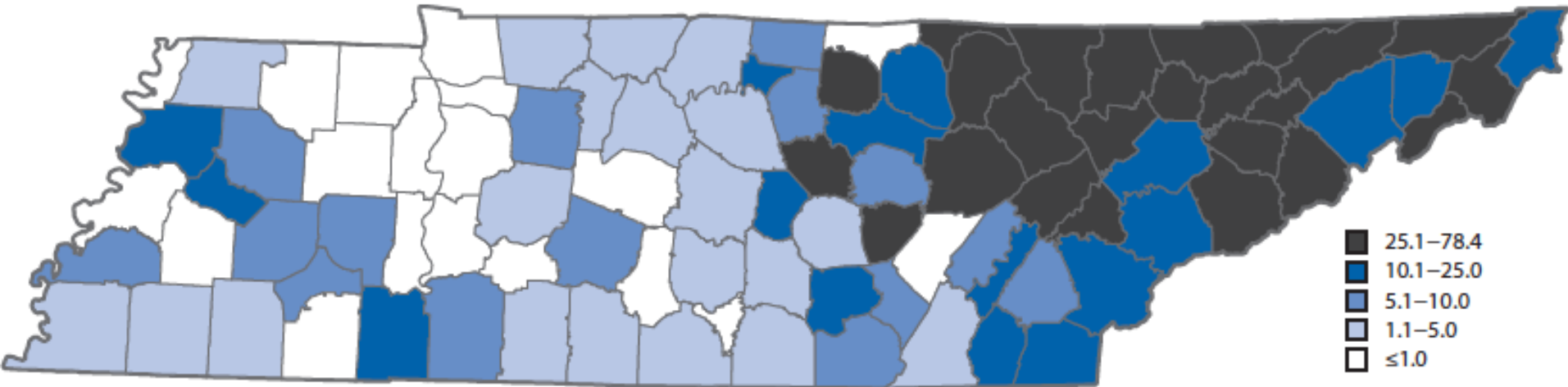
# Hepatitis C Prevalence Among Pregnant Women



Patrick SW, Bauer A, Warren MD, Jones TF, Wester C. Increasing Prevalence of Hepatitis C Among Women with Recent Live Births—United States and Tennessee, 2009–2014. *MMWR Morbidity and Mortality Weekly Report*. 2017 May 12;66(18):470-473

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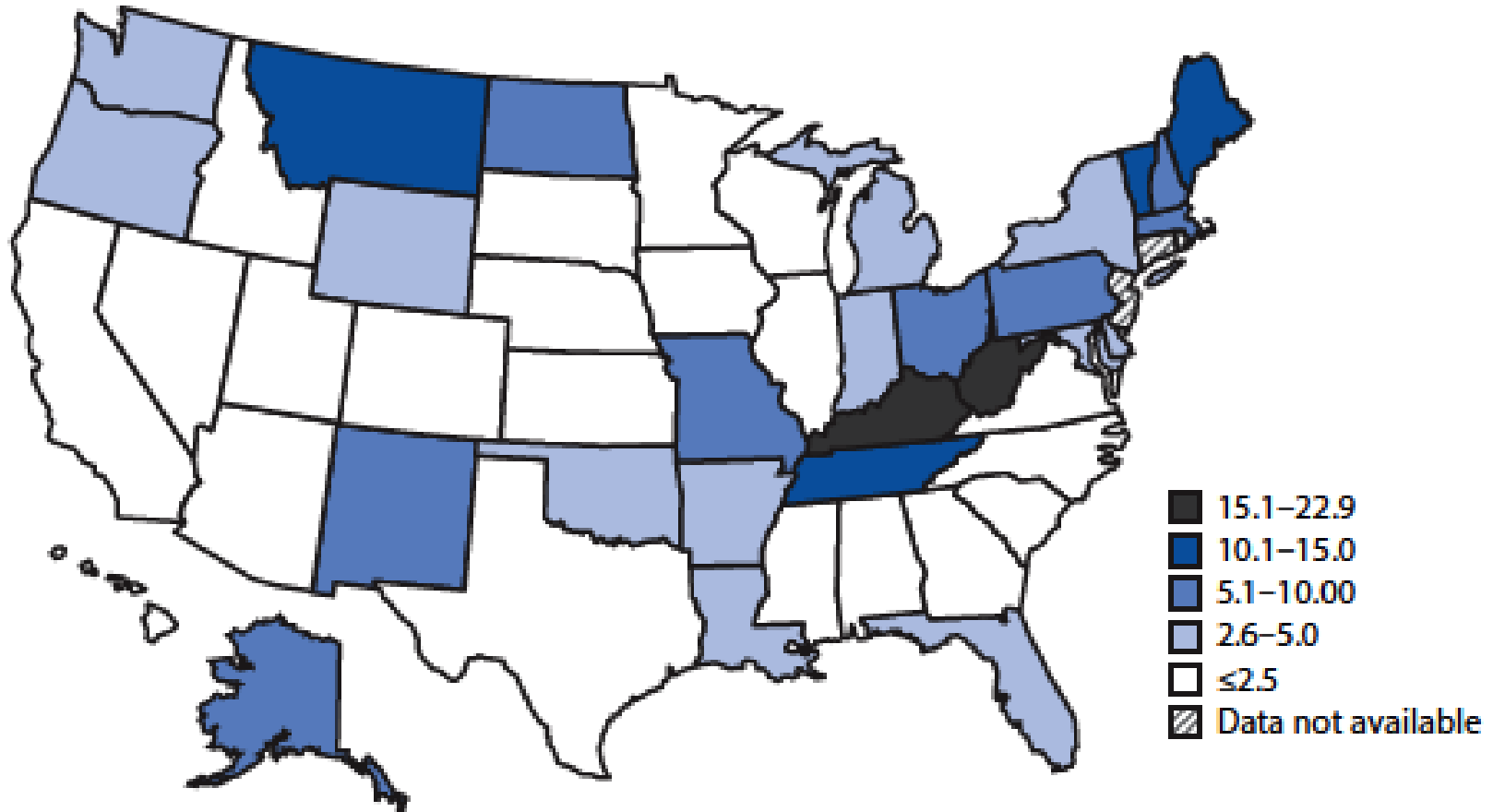
# Hepatitis C Prevalence Among Pregnant Women, Tennessee 2014



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# Hepatitis C Prevalence Among Pregnant Women, US 2014



Patrick SW, Bauer A, Warren MD, Jones TF, Wester C. Increasing Prevalence of Hepatitis C Among Women with Recent Live Births—United States and Tennessee, 2009–2014. *MMWR Morbidity and Mortality Weekly Report*. 2017 May 12;66(18):470-473

@stephenwpattick

# After Discharge from Hospital?

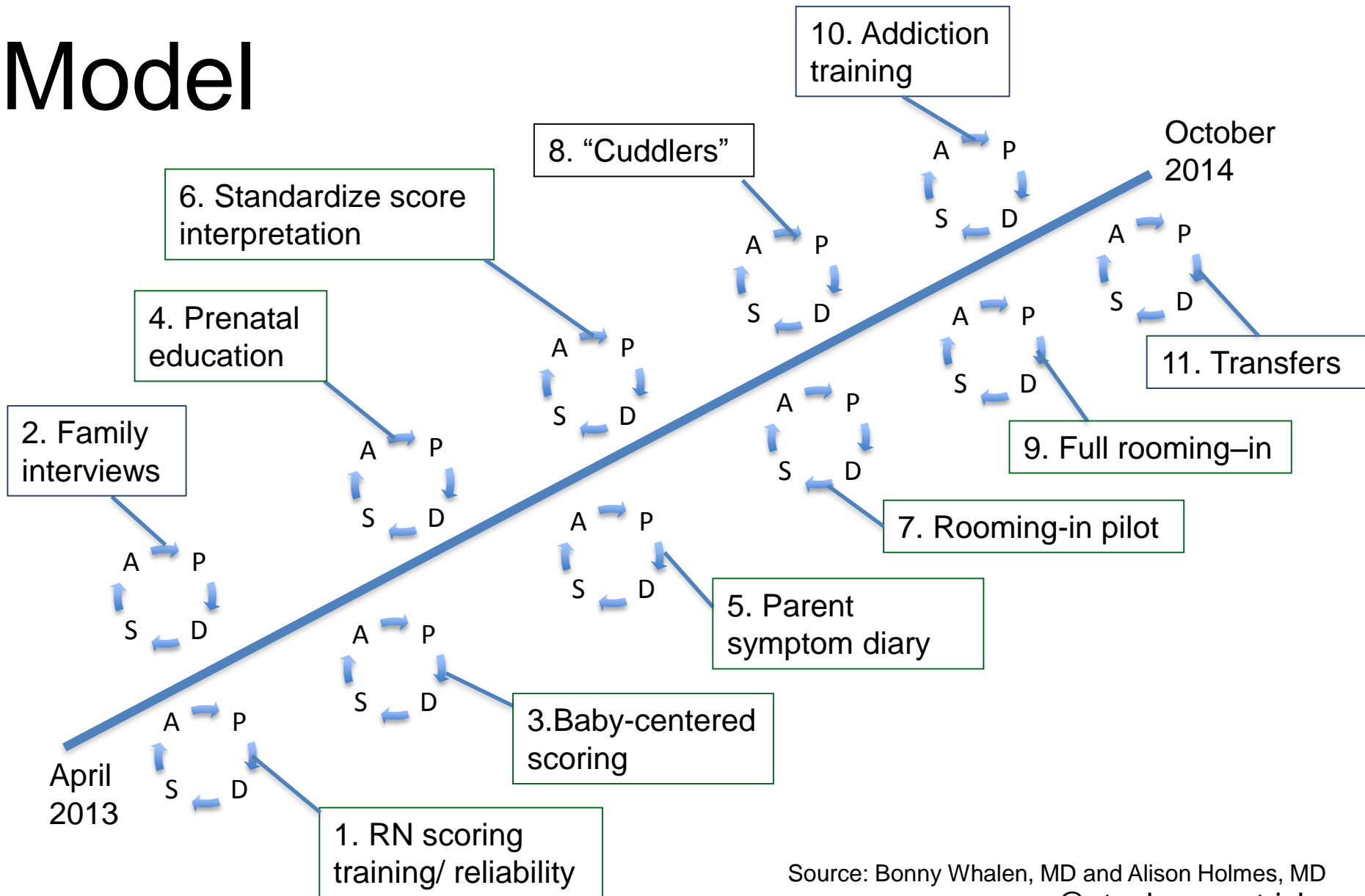
- Recent focus on reducing LOS
  - Infants with NAS 2x as likely to be readmitted in 30 days than uncomplicated term infants
    - Short LOS increase risk of readmission
  - Many hospitals discharging home on medications
    - Shorter LOS - 11 (IQR 7-18) vs. 23 (IQR 14-35)
    - Longer LOT - 59 days (IQR 38-90) vs. 19 days (IQR 10-31)
    - Use of ED > in first 6 months (aOR 1.46, 95% CI 1.02-2.09)

Patrick SW, Burke JF, Biel TJ, Auger KA, Goyal N, Cooper WO. Risk of Hospital Readmission Among Infants with Neonatal Abstinence Syndrome. *Hospital Pediatrics*. 2015 Oct;5(10):513-9. doi: 10.1542/hpeds.2015-0024

Maalouf FI, MD, Cooper WO, Slaughter C, Dudley J, Patrick SW. Outpatient Treatment of Neonatal Abstinence Syndrome Associated with Longer Treatment and Higher Rates of Healthcare Utilization. *Under review*.

# Novel Improvement Efforts

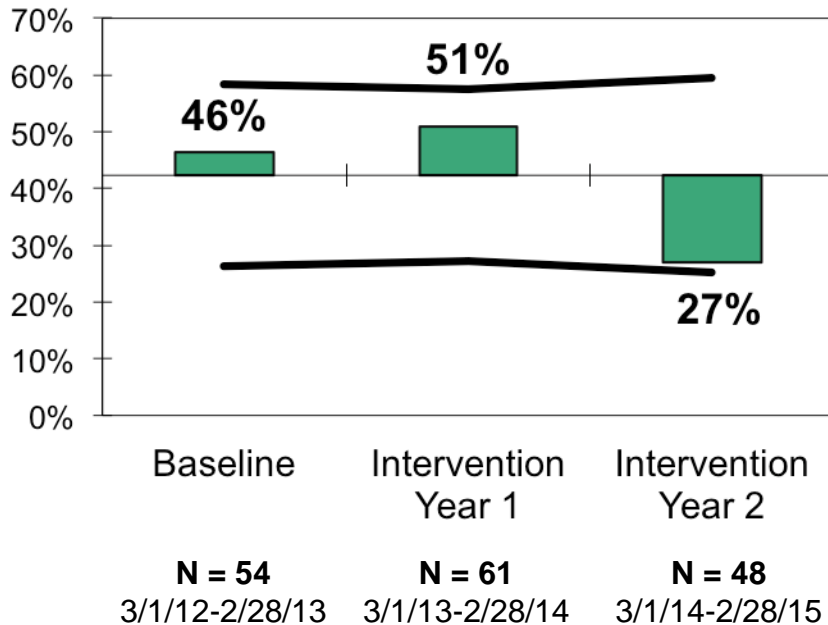
# Dartmouth as a Model



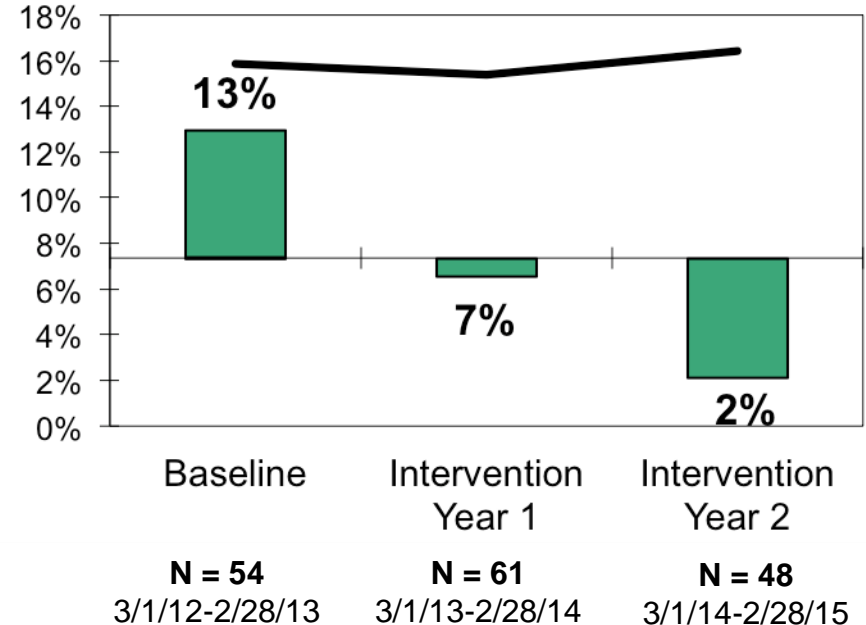


# Dartmouth

## % Opioid-exposed Newborns Receiving Morphine



## % Opioid-exposed Newborns Receiving Adjunctive Agents



**N = opioid-exposed infants per year**

# Yale's Approach To Scoring

- **Eat**
  - ≥ 1 oz or breastfeeding well
- **Sleep**
  - ≥ 1 hour undisturbed
- **Console**
  - Within 10 minutes

Source: Matthew Grossman, MD, Yale

# Yale: Proportion of Infants that Received Morphine

	Received Morphine (ESC)	Would Have Received Morphine (FNASS)	P value
<b>NAS infants (n=50)</b>	<b>6 (12%)</b>	<b>31 (62%)</b>	<b>&lt;0.01</b>

Source: Matthew Grossman, MD, Yale

# Our Experience at Vanderbilt

# Vanderbilt

- Admin: NICU always full, what can we do?
  - NAS ~10% of 96 bed NICU
- Neo/Peds: Let's move babies out of the NICU, allow rooming in
- Pilot –
  - RN training, educational materials, RN/hospitalist/neonatologist buy-in
  - Babies with NAS from newborn to floor (allow rooming in)

# Vanderbilt: Project HOPE

- Focus on family-centered care
- Interdisciplinary team
  - Newborn, NICU, General pediatrics, OB
  - RN, MD, SW, Child Life, Lactation
- Foundation
  - Data measurement, QI methods
  - Set collective goals

# Vanderbilt: Project HOPE

- September 2017
  - Funded by The Memorial Foundation
- Data
  - Consistent practice?
  - Measure changes
- Child life -> volunteer cuddlers
- Lactation -> improve breastfeeding
- Work through PDSA cycles

# NAS Summary - Priorities

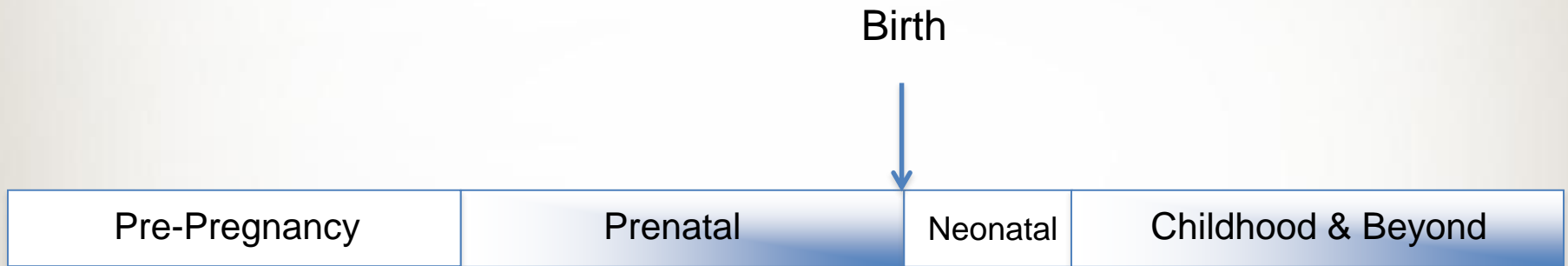
- Focus on non-pharm care and rooming-in
- Be consistent (i.e. adhere to a protocol)
- Focus on scoring
- Look beyond the baby
  - Talk to OB
  - Work on transition home



# Federal and State Policy



# Care Across the Continuum



# EPIDEMIC: RESPONDING TO AMERICA'S PRESCRIPTION DRUG ABUSE CRISIS

2011



# White House Plan

- **Education**
  - Parents, youth, and patients
  - Requiring prescribers to receive education on the appropriate and safe use, and proper storage and disposal of prescription drugs
- **Monitoring**
  - Every state with a Prescription Drug Monitoring Program
  - Work towards interstate interoperability

# White House Plan

- **Proper Medication Disposal**
  - Develop convenient and environmentally responsible prescription drug disposal programs to help decrease the supply of unused prescription drugs in the home.
- **Enforcement**
  - Provide law enforcement with the tools necessary to eliminate improper prescribing practices and stop pill mills.

# NAS Policy



United States Government Accountability Office

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Report to Congressional Requesters

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February 2015

# PRENATAL DRUG USE AND NEWBORN HEALTH

## Federal Efforts Need Better Planning and Coordination

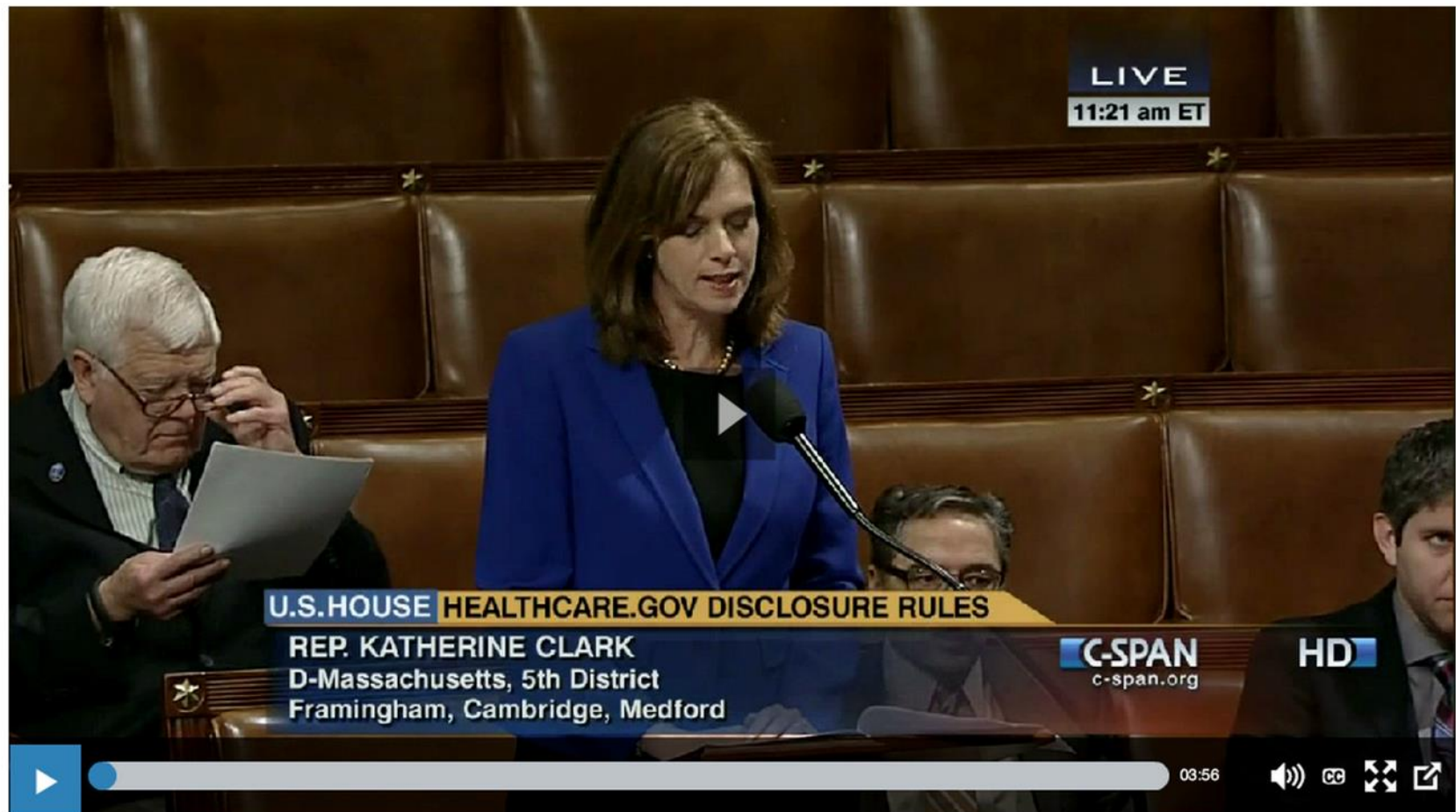
# GAO: Highlights

- NIH Funding from 2008-2013
  - \$21.6 million
- 14 federal programs provide direct services
- Need coordination, suggest one HHS contact
  - “there is a risk that federal efforts may be duplicated, overlapping, or fragmented”



Mar 19 2015

## Rep Clark, Sen McConnell, Sen Casey, Rep Stivers introduce bill to help newborns suffering from opiate dependency



Rep Clark, Sen McConnell, Sen Casey, Rep Stivers introduce bill to help newborns suffering from opiate dependency

# Protecting Our Infants Act, 2015

- **Requests that HHS:**
  - Review and improve coordination in HHS
  - Develop a strategy to address gaps in research and federal programs
  - Study and develop recommendations for preventing and treating prenatal opioid use and NAS
  - Improve data and public health response by supporting states and tribes
- **Signed by President Obama in November 2015**

# Comprehensive Addiction and Recovery Act of 2016

- **Highlights:**
  - Broad approach to prevention, expansion of treatment inclusive of pregnant women and children
  - Improving Treatment for Pregnant and Postpartum Women
  - GAO report on NAS
  - Infant Plan of Safe Care
- **Signed by President Obama in July 2016; however, to date, not fully funded (\$1B in treatment funds in 21<sup>st</sup> Century Cures Act)**

# Drug Policy in the New Administration

- White House Office of National Drug Control Policy  
“Drug Czar”
  - Almost eliminated twice
  - Recent nominee for position, withdrew, nominated again
- Opioid Commission, led by Gov. Chris Christie
- Recent commitment to ~\$500 million in funds to states to expand treatment by Sec. Tom Price
- Will approach focused on prevention, treatment expansion continue?
- There has been wide bipartisan support on the issue

# State Policy

# Tennessee: Criminal Justice vs. Public Health

- **Safe Harbor Act of 2013**
  - “ensure that family-oriented drug abuse or drug dependence treatment is available”
  - Treatment by 20<sup>th</sup> week -> No prosecution, no child removal just for history of drug misuse
- **Public Chapter 820**
  - A woman can be charged with a misdemeanor if she illegally uses narcotics during pregnancy and if the baby is harmed as a result (ex. Neonatal Abstinence Syndrome)

POLICY STATEMENT Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of all Children

American Academy of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN™

## A Public Health Response to Opioid Use in Pregnancy

Stephen W. Patrick, MD, MPH, MS, FAAP<sup>1</sup> AND David M. Schiff, MD, FAAP<sup>2</sup> COMMITTEE ON SUBSTANCE USE AND PREVENTION

The use of opioids during pregnancy has grown rapidly in the past decade. As opioid use during pregnancy increased, so did complications from their use, including neonatal abstinence syndrome. Several state governments responded to this increase by prosecuting and incarcerating pregnant women with substance use disorders; however, this approach has no proven benefits for maternal or infant health and may lead to avoidance of prenatal care and a decreased willingness to engage in substance use disorder treatment programs. A public health response, rather than a punitive approach to the opioid epidemic and substance use during pregnancy, is critical, including the following: a focus on preventing unintended pregnancies and improving access to contraception, universal screening for alcohol and other drug use in women of childbearing age, knowledge and informed consent of maternal drug testing and reporting practices, improved access to comprehensive obstetric care, including opioid replacement therapy, gender-specific substance use treatment programs, and improved funding for social services and child welfare systems. The American College of Obstetricians and Gynecologists supports the value of this clinical document as an educational tool (December 2016).

### INTRODUCTION

Substance use during pregnancy occurs commonly in the United States. In 2009, the Substance Abuse and Mental Health Administration estimated that 400 000 infants each year are exposed to alcohol or illicit drugs in utero.<sup>1</sup> Although concern regarding substance use in pregnancy is not new, it has recently increased among health care providers, the public, and policy makers as the opioid epidemic's impact reached an increasing portion of the US population, including pregnant women and their infants.<sup>2,3</sup> Several recent studies highlighted an increase in prescription opioid use among women of childbearing age<sup>4</sup> and among pregnant women.<sup>5,6</sup> As opioid use among pregnant women increased, the rate of infants in the United States experiencing opioid withdrawal after

### abstract

FREE

<sup>1</sup>Departments of Pediatrics and Health Policy, McAllister Station Research and Vanderbilt Center for Health Services Research, Nashville, Tennessee, and <sup>2</sup>Department of Pediatrics, Boston Medical Center and Boston University School of Medicine, Boston, Massachusetts

Dr Schiff conceptualized and drafted the initial manuscript and critically reviewed the revised manuscript; Dr Patrick conceptualized the manuscript and critically reviewed and revised the manuscript, and both authors approved the final manuscript as submitted.

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FROM THE AMERICAN ACADEMY OF PEDIATRICS

Patrick SW, Schiff DM, AAP COMMITTEE ON SUBSTANCE USE AND PREVENTION. A Public Health Response to Opioid Use in Pregnancy. *Pediatrics*. 2017;139(3):e20164070



@stephenwpattick

# AAP Policy Statement

- Public Health vs. Punitive Response
  - Focus on prevention (improving access to contraception)
  - Universal screening for alcohol and drug use in women of childbearing age
  - Informed consent for drug testing
  - Improve access to comprehensive addiction and prenatal access
  - Improved funding for child welfare systems



# Conclusions

- Opioid misuse is not new
- Recent rise of opioid use and NAS left the health system unprepared
- Public health approaches are needed
- Care for NAS needs standardization, be comprehensive and inclusive of mother's needs

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**Thank you!**

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