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Rates of Neonatal Abstinence Syndrome Amid Efforts to Combat the Opioid Abuse Epidemic

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The United States is experiencing a rapid increase in neonatal abstinence syndrome (NAS) caused by in utero exposure to prescription and illicit (heroin) opioids.^{1,2} Increases in NAS correlate with the well-documented increase in prescription opioid abuse.³ State and federal policy efforts to combat this increase in drug abuse have halted the increase in prescription drug abuse but are associated with an increase in illicit drug use.³ Despite the publicity surrounding the drug abuse epidemic, little is known regarding the effect of these policies on NAS. Further, there is a dearth of literature specifically assessing trends in NAS, predominately in rural states relative to the nation as a whole. We sought to describe the current trend of NAS in the United States and in Kentucky, a rural state that has a particularly high burden of opioid abuse.⁴

Methods

Kentucky State Inpatient Data and National Inpatient Sample data were used in this cross-sectional analysis. Neonatal abstinence syndrome–related births were identified using *International Classification of Diseases, Ninth Revision, Clinical Modification* code 779.5 and summarized as the rate per 1000 live births.¹ Rates were plotted by year for 2008 to 2014 for Kentucky NAS births and 2008 to 2013 nationwide with 95% CIs using the latest data available. The University of Kentucky institutional review board approved this study.

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Critical revision of the manuscript for important intellectual content: All authors. Statistical analysis: Brown.

Administrative, technical, or material support: Pauly, Talbert.

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Results

Nationally, the rate of NAS more than doubled from 3.6 (95% CI, 2.9–4.1) in 2009 to 7.3 (95% CI, 5.5–8.6) (n = 27 315 NAS cases) per 1000 births in 2013 (Figure and Table). In Kentucky, the rate was 6.6 in 2009, increased to 15.1 (n = 771 NAS cases) in 2013, and peaked at 23.4 in the fourth quarter of 2014 (n = 1087 NAS cases). This rate in Kentucky for 2013 corresponded to a relative rate of 2.1 (95% CI, 1.8–2.7) compared with the national rate.

Discussion

The rate of NAS in the United States has steadily increased from 2008 to 2013. The rate of NAS in Kentucky was more than twice that of the national rate and reflects the disparate effect drug abuse has among states.⁴ While past legislation and policies were intent on reducing access (“supply” adverse effect) to prescription medications, increases in illicit drug abuse appears to partially offset the effect of these efforts.³ Nevertheless, the rate of opioid abuse and overdose seems to be slowing owing to a plethora of state and federal policies. The observation of this study showing that the rate of NAS has not likewise slowed or decreased owing to these policies deserves much more future investigation and attention from policymakers.

New federal legislation appropriating funds for addiction treatment will affect the “demand” side of opioid abuse. The Protect Our Infants Act of 2015 is a federal, bipartisan law introduced specifically to combat the NAS epidemic.⁵ This law, along with several others currently being considered by Congress and covered by national media stories, has succeeded in bringing national attention to NAS. However, it fails to offer any tangible short-term solutions to the rapidly growing problem. Meanwhile, rural states, such as Kentucky, that are disproportionately affected by the opioid abuse epidemic must continue to enforce and supplement policies related to surveillance programs along with coverage for addiction services through state services. Because of the tremendous burden of NAS and the potential for lifelong complications for the neonate, tailoring of interventions to pregnant women or women of childbearing age should be a priority of national and state drug abuse efforts.⁶

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Figure.
National (2008–2013) and Kentucky (2008–2014) Neonatal Abstinence Syndrome Trends

Table

Rates of Neonatal Abstinence Syndrome in Kentucky vs United States

Year	Rate (95% CI)	Rate
	National	Kentucky
2008	2.8 (2.4–3.2)	5.0
2009	3.6 (2.9–4.1)	6.6
2010	5.0 (4.1–5.7)	7.8
2011	5.2 (4.1–6.0)	10.7
2012	6.1 (4.6–7.1)	12.5
2013	7.3 (5.5–8.6)	15.1
2014	NA	21.2

Abbreviation: NA, not available.