
Thinking Matters Symposium

2020 Thinking Matters Symposium

May 8th, 12:00 AM

Estimating Neonatal Abstinence Syndrome in Maine Using Hospital Discharge Data

Emily Bauer MPH

University of Southern Maine, emily.bauer@maine.edu

Follow this and additional works at: <https://digitalcommons.usm.maine.edu/thinking-matters-symposium>

Bauer, Emily MPH, "Estimating Neonatal Abstinence Syndrome in Maine Using Hospital Discharge Data" (2020). *Thinking Matters Symposium*. 55.

<https://digitalcommons.usm.maine.edu/thinking-matters-symposium/2020/poster-sessions/55>

This Poster Session is brought to you for free and open access by the Student Scholarship at USM Digital Commons. It has been accepted for inclusion in Thinking Matters Symposium by an authorized administrator of USM Digital Commons. For more information, please contact jessica.c.hovey@maine.edu.

Estimating Neonatal Abstinence Syndrome in Maine Using Hospital Discharge Data

Emily Bauer, MPH, University of Southern Maine, MSN Candidate

Faculty Advisor: Dr. Katherine Ahrens, University of Southern Maine

Background

Incidence of NAS has increased in the US from 1.5 to 8.0 cases per 1000 hospital births from 2004 to 2014. Among 28 states with available data, Maine had the third highest annual change in incidence rate from 2009 to 2012, with 30.4 NAS cases per 1000 hospital births. As rates of NAS appeared to be approximately 5 times higher in Maine than the national average, this warranted further examination of trends of NAS among hospital births in Maine using more recent data.

Objectives

The objective of this poster is to share the results from our exploratory study on trends in diagnoses of neonatal abstinence syndrome (NAS) at newborn hospitalization in Maine using state-level hospital discharge data from 2009 to 2018.

Methods

We used hospital discharge data collected by the Maine Health Data Organization. We identified neonates among hospital discharges in Maine from 2009-2018 by matching date of birth to date of admission for persons under 1 year of age (n=123,519 neonates). We used International Classification of Diseases, Clinical Modification (ICD-CM) codes to categorize neonates diagnosed with NAS. For ICD-9-CM (2009 through 9/2015), codes for NAS included: 779.5, 779.4. For ICD-10 CM (10/2015 through 2018), we followed the 2019 Council of State and Territorial Epidemiologists' (CSTE) Tier 2 Case Classification scheme for NAS when using administrative data. Our primary NAS case definition was CSTE's confirmed or suspect case of NAS. Our expanded NAS case definition also included codes for neonates affected by other unspecified maternal medication, which could include *in utero* opioid exposure (Table 1). Using each definition, JoinPoint regression analysis was used to model trends over time and identify any change in slope (Figure 1 and 2).

Figure 1. Annual prevalence of neonatal abstinence syndrome diagnosis per 1,000 births in Maine

Confirmed or suspected neonatal abstinence syndrome definition

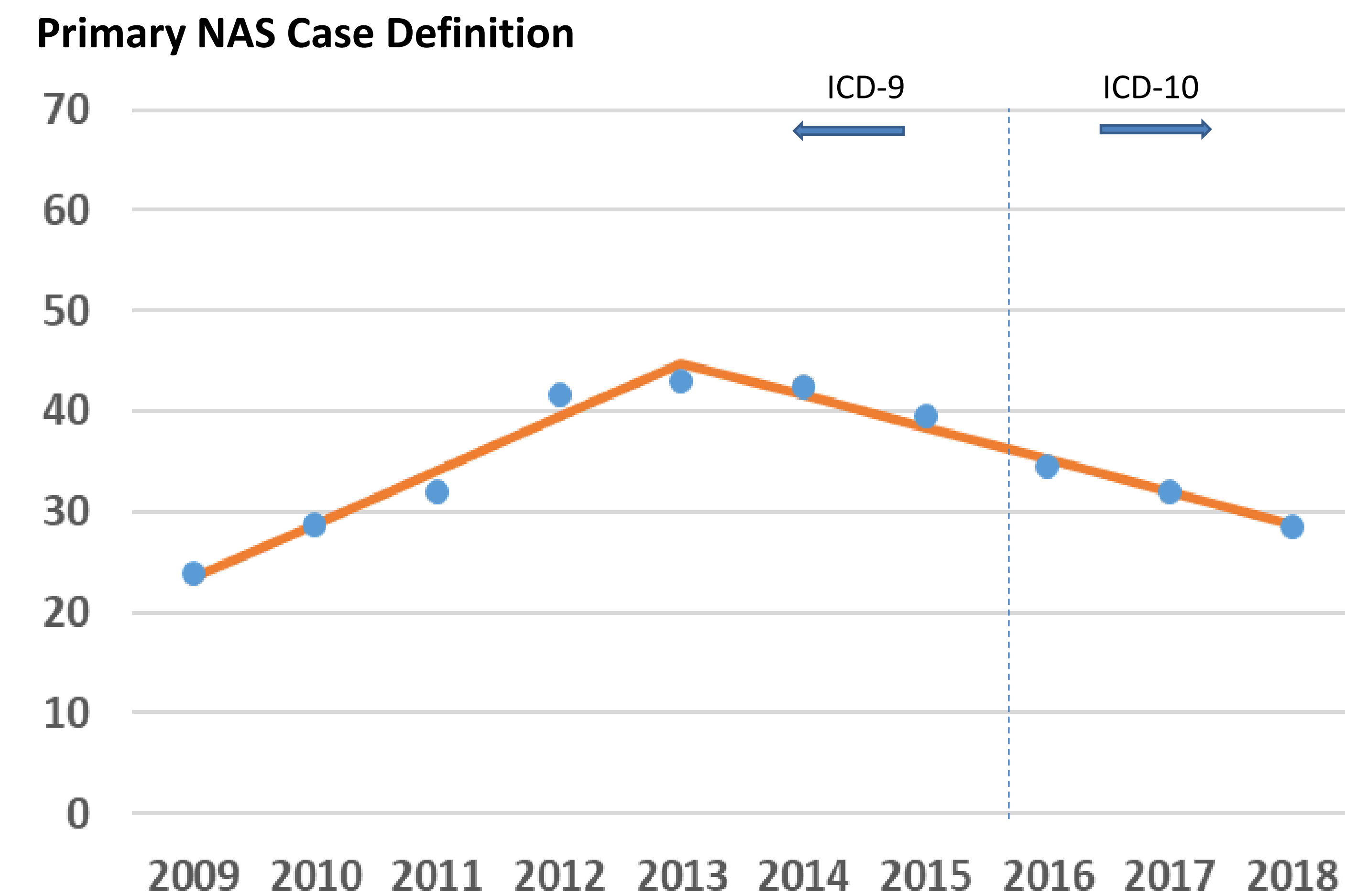


Figure 2. Annual prevalence of neonatal abstinence syndrome diagnosis per 1,000 births in Maine

Expanded neonatal abstinence syndrome definition (confirmed, suspected and unspecified drugs)

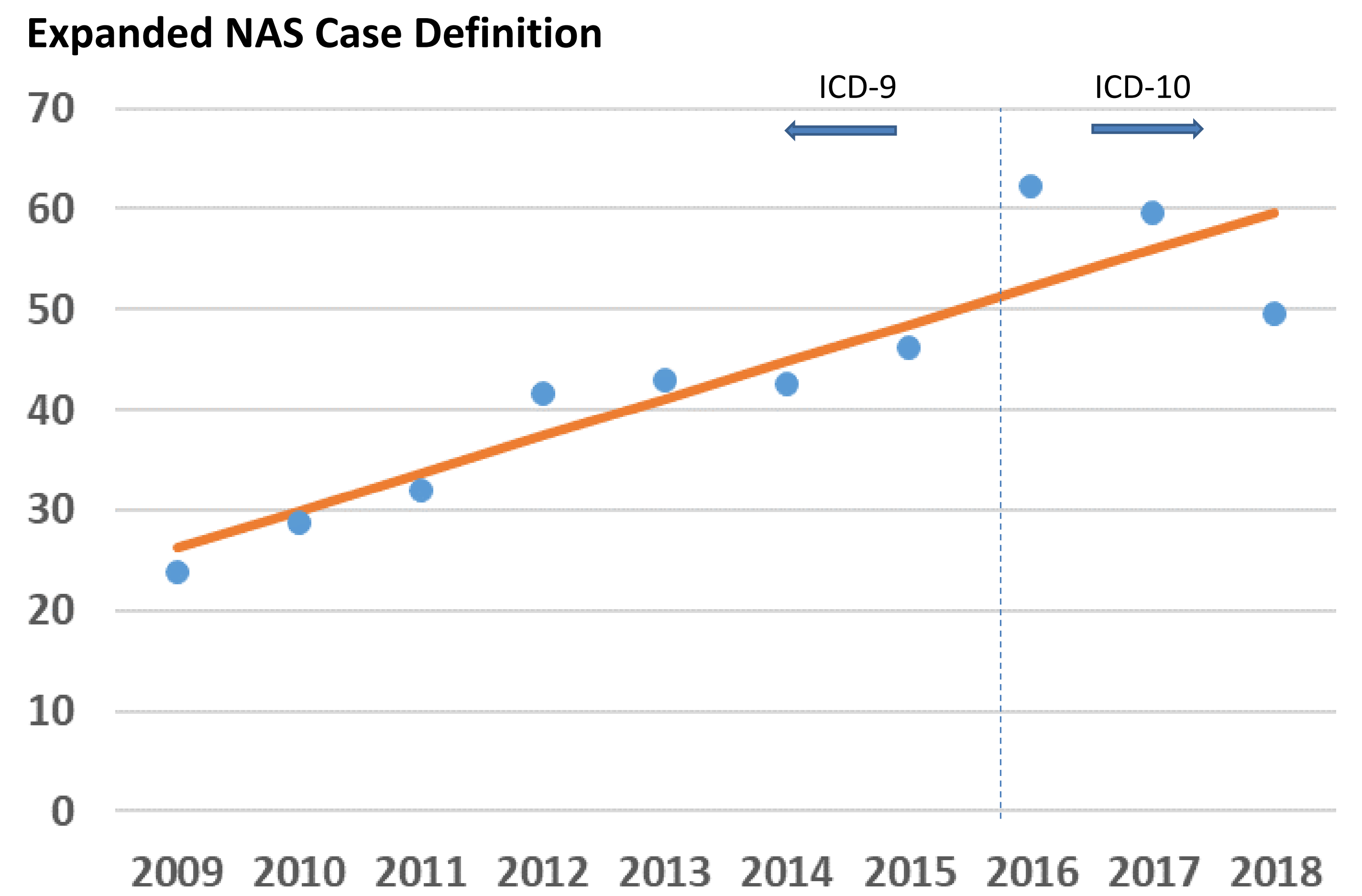


Table 1: ICD-10-CM codes associated with primary and expanded NAS case definitions

Definition	Interpretation	Codes
Primary NAS case definition	Confirmed or Suspected NAS definition	P96.1 – Neonatal Abstinence Syndrome P04.14 – Newborn affected by maternal use of opiates P04.17 – Newborn affected by maternal use of sedative-hypnotics P04.1A – Newborn affected by maternal use of anxiolytics
Expanded NAS case definition*	Confirmed or Suspected NAS and Unspecified drug codes	<i>In addition to codes listed above:</i> P04.1 – Newborn affected by other maternal medication P04.40 – Newborn affected by maternal use of unspecified drugs of addiction P04.18 – Newborn affected by other maternal medication P04.19 – Newborn affected by maternal use of unspecified medication P04.49 – Newborn affected by maternal use of other drugs of addiction

*Separate ICD-10 CM codes exist for newborns affected by maternal use of chemotherapy, cytotoxic drugs, anticonvulsants, antidepressants, amphetamines, sedative hypnotics, anxiolytics, tobacco, alcohol, cocaine, hallucinogens, nutritional chemical substances, environmental chemical substances, noxious substances, cannabis, other maternal noxious substances, and noxious substance, unspecified.

Results

Using our primary NAS case definition, diagnoses of NAS increased from 2009 to 2013 (24 to 43 per 1,000 births), and then decreased from 2013 to 2018 (43 to 28 per 1,000 births), as seen in Figure 1. Using our expanded NAS case definition, NAS increased, in a linear fashion, from 2009-2018 (24 to 50 per 1,000 births), as seen in Figure 2.

Conclusion

Due to the difference in trends observed based on NAS definition, caution should be used when interpreting NAS trends using hospital discharge data from Maine. Further research should utilize hospital-level, electronic medical record reviews to identify if codes for newborns affected by unspecified maternal drugs include opioid exposure.

Acknowledgements

Thank you Dr. Kate Ahrens, Muskie School of Public Service, Cutler Institute and the Office of Graduate Studies. Thank you to the Maine Health Data Organization for providing data for this project.

References

(CSTE) CoSaTE. Neonatal Abstinence Syndrome Standardized Case Definition. CSTE position statement 2019.
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;65:799-802.
Winkelman TNA, Villapiano N, Kozhimannil KB, Davis MM, Patrick SW. Incidence and Costs of Neonatal Abstinence Syndrome Among Infants With Medicaid: 2004-2014. Pediatrics 2018;141:e20173520.