



Neonatal Abstinence Syndrome (NAS) and Maternal Opioid-Related Diagnoses (MODs) in Kansas, 2016-2021

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Importance

- “Substantial increases in both neonatal abstinence syndrome and maternal opioid use disorder have been observed in the United States.”

Reference: Hirai AH, Ko JY, Owens PL, Stocks C, Patrick SW. Neonatal abstinence syndrome and maternal opioid-related diagnoses in the US, 2010-2017. JAMA. 2021 Jan 12;325(2):146-155.

Objectives

- To examine trends in NAS and MODs from 2016 to 2021
- To identify/describe the selected demographic characteristics of NAS and MODs in 2016-2020 (5-year combined)

Data source

- Kansas hospital discharge data
 - Data collected for billing and other administrative purposes rather than surveillance purpose

Definition - NAS

National Outcome Measure 11: Rate of neonatal abstinence syndrome per 1,000 birth hospitalizations

- **Numerator:** Number of birth hospitalizations with a diagnosis code of neonatal abstinence syndrome
 - ICD-10-CM diagnosis code: P96.1 (neonatal withdrawal symptoms from maternal use of drugs of addiction)
- **Denominator:** Number of birth hospitalizations
 - ICD-10-CM diagnosis codes: Z38.00, Z38.01, Z38.1, Z38.2, Z38.30, Z38.31, Z38.4, Z38.5, Z38.61, Z38.62, Z38.63, Z38.64, Z38.65, Z38.66, Z38.68, Z38.69, Z38.7, or Z38.8
 - Those with an indication of transfer from another hospital were excluded to avoid duplication.
 - *Birth hospitalizations* refer to liveborn infant discharge records.

Reference: Maternal and Child Health Bureau. Federally Available Data (FAD) Resource Document. September 28, 2021; Rockville, MD: Health Resources and Services Administration.

Definition - MODs

- **Numerator:** Number of delivery hospitalizations with a diagnosis code of opioid dependence, opioid abuse, long-term use of opioid medications, and unspecified opioid use
 - ICD-10-CM diagnosis code: F11.20, F11.22-F11.29 (opioid dependence); F11.10, F11.12-F11.19 (opioid abuse), Z79.891 (long-term use of opioid medications); and F11.90-F11.99 (unspecified opioid use)
- **Denominator:** Number of *delivery hospitalizations*
 - ICD-10-CM diagnosis codes: Z37, O80, O82, O75.82; Medicare Severity Diagnosis Related Group delivery codes 765-768, 774-775, 783-788, 796-798, 805-807; and ICD-10 procedure codes 10D00Z0-10D00Z2, 10D07Z3-0D07Z8, 10E0XZZ
 - *Delivery hospitalizations* refer to maternal discharge records, regardless of pregnancy outcome

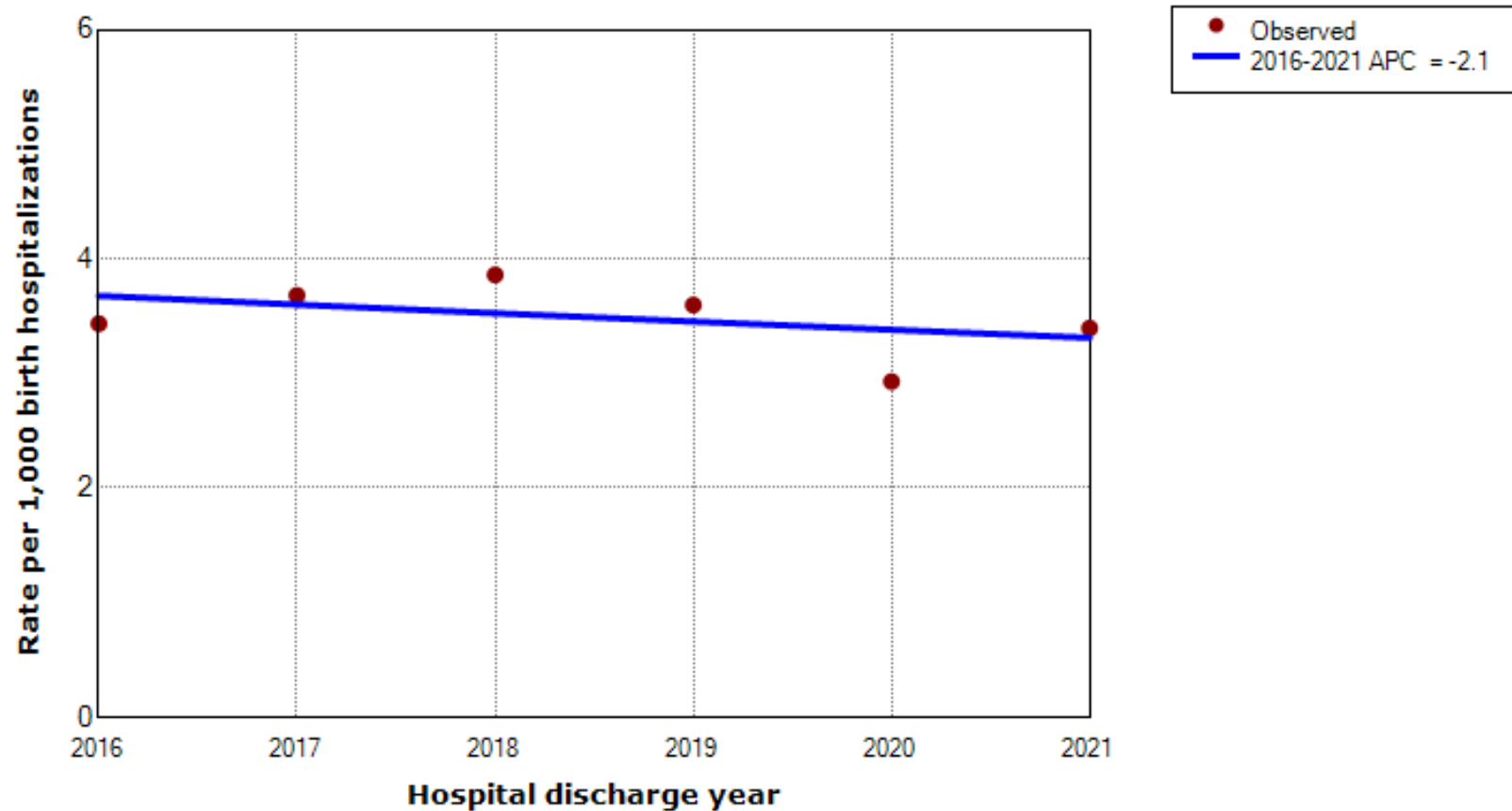
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Kansas NAS incidence by discharge year

Discharge year	NAS	Birth hospitalization	Rate per 1,000 birth hospitalization	95% confidence interval	
2016	117	34070	3.4	2.8	4.1
2017	121	32870	3.7	3.0	4.3
2018	120	31085	3.9	3.2	4.6
2019	116	32249	3.6	2.9	4.3
2020	91	31065	2.9	2.4	3.6
2021	107	31513	3.4	2.8	4.0

Source: Kansas Department of Health and Environment, Kansas hospital discharge data (resident)

Trends in NAS, Kansas, 2016-2021



* Indicates that the Annual Percent Change (APC) is significantly different from zero at the alpha = 0.05 level.

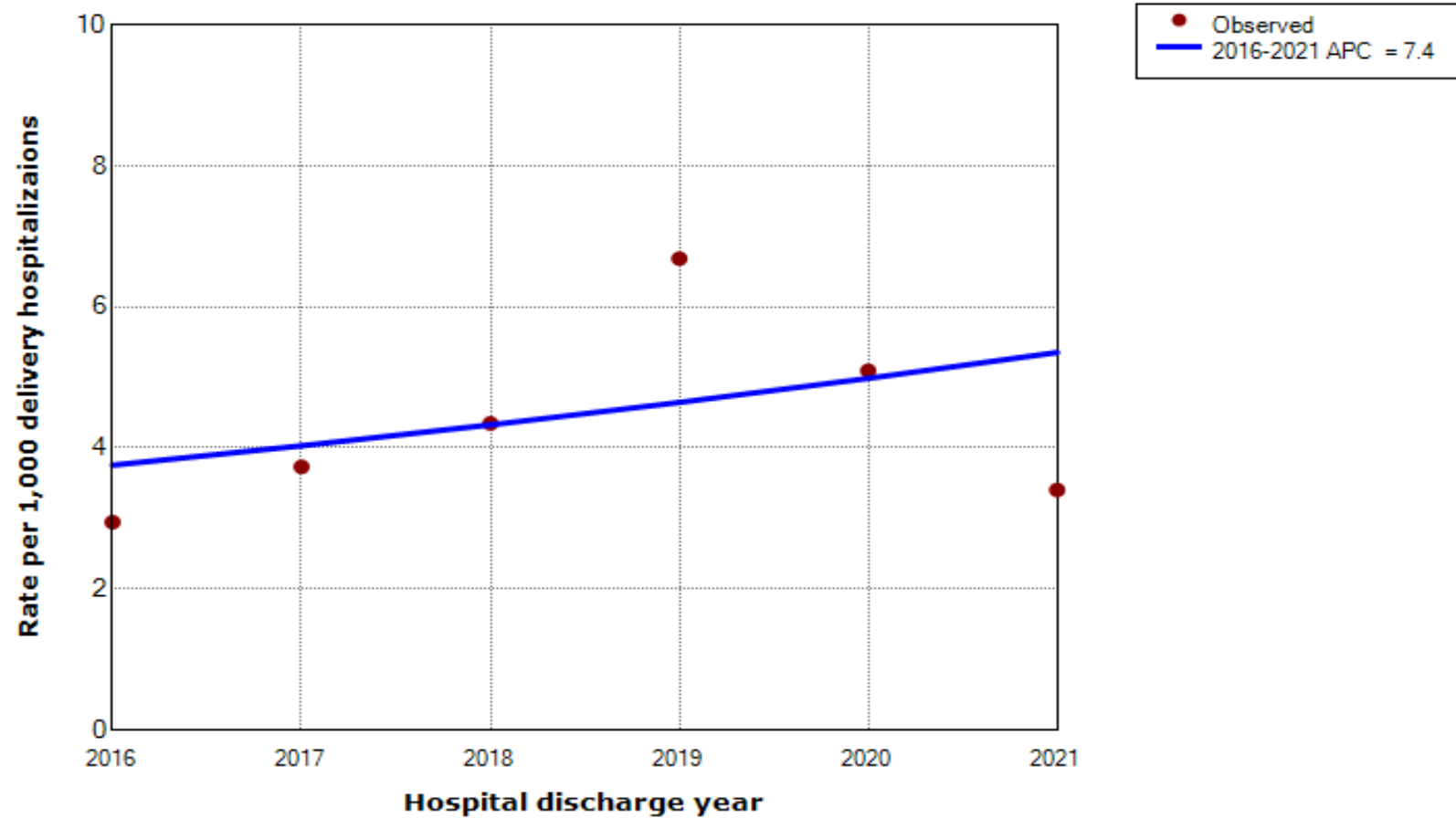
Source: Kansas Department of Health and Environment, Kansas hospital discharge data (resident)

Kansas MODs prevalence by discharge year

Discharge year	NAS	Delivery hospitalization	Rate per 1,000 delivery hospitalization	95% confidence interval	
2016	103	34952	2.9	2.4	3.5
2017	125	33499	3.7	3.1	4.4
2018	138	31739	4.3	3.6	5.1
2019	217	32453	6.7	5.8	7.6
2020	160	31406	5.1	4.3	5.9
2021	107	31434	3.4	2.8	4.0

Source: Kansas Department of Health and Environment, Kansas hospital discharge data (resident)

Trends in MODs, Kansas, 2016-2021



* Indicates that the Annual Percent Change (APC) is significantly different from zero at the alpha = 0.05 level.

Source: Kansas Department of Health and Environment, Kansas hospital discharge data (resident)

Selected demographic characteristics of NAS, Kansas, 2016-2020 (Total=565 cases)

- Predominantly non-Hispanic White (79.1%)
- Insured by Medicaid (70.8%)
- Resided in the lowest quartile of median household income (37.2%)
- Resided in urban counties (62.8%)

Selected demographic characteristics of MODs, Kansas, 2016-2020 (Total=743 cases)

- Mean maternal age (28.2 years)
- Predominantly non-Hispanic White (77.9%)
- Insured by Medicaid (58.4%)
- Resided in the lowest quartile of median household income (31.0%)
- Resided in urban counties (69.2%)

Conclusions

- Kansas MODs data would inform strategies and drive action to help prevent inappropriate opioid use and increase the early identification for and equitable access to treatment for pregnant women with opioid use disorder.
- This would help reduce the incidence of babies born with withdrawal symptoms (i.e., neonatal abstinence syndrome) and family disruption related to child welfare system involvement due to parental substance use, as well as improved maternal, infant, and family health outcomes.



THANK YOU!

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