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Bulletin No. 5 February 22, 2016

## Increase in Neonatal Abstinence Syndrome, Alaska, 2001–2015

### Background

Prenatal use of opioids, which include heroin, other illicit substances, and prescription drugs, is increasing nationally, resulting in an associated increase in Neonatal Abstinence Syndrome (NAS).<sup>1,2,3</sup> Although the long-term health effects of NAS are not well documented, newborns may experience severe withdrawal symptoms requiring extended hospitalization. The purpose of this Bulletin is to describe the epidemiology of NAS in Alaska.

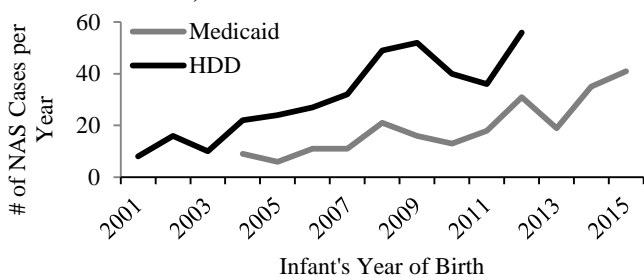
### Methods

We used two data sources, the Hospital Discharge Database (HDD) and Medicaid claims. Infants with NAS were identified by ICD-9-CM and ICD-10-CM codes for “Drug Withdrawal Syndrome in Newborn” (779.5 and P96.1) occurring within 28 days of birth. HDD data for 2001–2012 provided an estimate of statewide rates. We conducted an *ad hoc* analysis to assess potential impact due to underrepresentation of rural hospitals in the HDD using a pre-existing dataset of combined Alaska HDD and Indian Health Service hospital data for 2010–2012. Medicaid data for 2004–2015 provided information on more recent trends. Multiple Medicaid claims for the same infant were de-duplicated based on name and date of birth. We linked Medicaid records to Alaska birth certificates to assess prenatal care utilization. We evaluated trends using negative binomial regression.

### Results

The *ad hoc* analysis suggested the HDD captured 98% of possible NAS infants during 2010–2012. The HDD alone identified 372 infants with NAS during 2001–2012. The annual number of infants diagnosed with NAS ranged from a low of 8 in 2001 to a high of 56 in 2012 (Figure); the corresponding annual rate of NAS in Alaska ranged from 0.8 to 5.1 per 1,000 live births, respectively. There was a statistically significant increase in NAS rates over the 12-year time period ( $p < 0.01$ ). The Medicaid claims database identified 231 infants with NAS during 2004–2015 (Figure), ranging from a low of 6 in 2005 to a high of 41 in 2015. The corresponding annual rate of NAS among the Medicaid population ranged from 1.0 per 1,000 Medicaid-eligible births in 2005 to 6.4 per 1,000 in 2014; there was a statistically significant increase in NAS rates from 2004 to 2014 ( $p < 0.01$ ). The rate in 2015 was not calculated because birth data have not yet been finalized for that year.

**Figure. Number of Infants with NAS per Year by Data Source — Alaska, 2001–2015**



Based on HDD estimates, during 2001–2012, the average NAS rates were highest among residents of the Municipality of Anchorage and the Southeast region (3.6 and 3.4 per 1,000 births, respectively) and lowest for the Southwest and Northern regions (1.5 and 0.9 per 1,000 births, respectively). The average length of hospital stay was 16 days (range: 1–129). The average hospitalization charge was \$88,869, compared to an average of \$12,731 among all infants aged  $\leq 28$  days during the same time period. Medicaid was the primary payer of hospitalization charges for 78% of the HDD-identified infants with NAS.

Prenatal care information was unknown for 52 (23%) of the Medicaid NAS infants. Among the remaining 179 Medicaid NAS infants, 74 (41%) had no or inadequate care based on a score combining information on timing and number of prenatal care visits.<sup>4</sup> By comparison, among all Medicaid-eligible births in 2014, 25% had no prenatal care or inadequate care.

### Discussion

Both data sources evaluated indicated a consistent increase in the rate of NAS in Alaska. The statewide NAS rate increased more than five-fold during 2001–2012, from less than one to more than five for every 1,000 live births. Similarly, from 2000 to 2012 the rate among all US newborns increased from 1.2 to 5.8 per 1,000 hospital births.<sup>2,3</sup> The majority of the cost for caring for these infants is billed to Medicaid. Rates were highest in Anchorage and Southeast Alaska, regions that also experience higher rates of other opioid-related outcomes, such as heroin-associated deaths.<sup>5</sup>

Prenatal care visits are an opportunity to screen mothers for opioid use and provide services as appropriate to reduce severity or potentially prevent NAS symptoms for the infant. The high percentage of mothers of infants with NAS identified through Medicaid who had inadequate or no prenatal care indicates that screening mothers for opioid use during prenatal care visits will not identify all infants at risk for NAS. This study was unable to distinguish between appropriately prescribed opioid use, abuse of prescription opioids, and use of illicit drugs. NAS prevention efforts will differ depending on the type of prenatal exposure.

Neither the HDD nor the Medicaid database completely represent Alaska’s total birth population. During 2001–2012, only 67%–83% of in-state births occurred at hospitals reporting to the HDD. During 2004–2015, 52% of all newborns were Medicaid-eligible. Despite this limitation, the burden on the health care system caring for these infants has clearly increased and a broad spectrum of prevention and treatment interventions are needed.

### Recommendations

1. Prior to prescribing an opiate, providers should screen all women of reproductive age for their risk of pregnancy and counsel all patients about the potential risk of addiction.
2. Severe withdrawal symptoms among NAS-affected infants can be reduced by screening all pregnant women about their use of opioids and making appropriate referrals. Resources and information about the Screening, Brief Intervention, Referral to Treatment (SBIRT) approach are available (see: <https://www.uaa.alaska.edu/sbirt/Resources/index.cfm> and <http://www.samhsa.gov/sbirt>).
3. Participation in the Alaska Prescription Drug Monitoring Program can help prescribers provide better patient care and reduce the risk of addiction, diversion, overdose, and other adverse health effects (for more information, go to: <https://www.commerce.alaska.gov/web/cbpl/ProfessionalLicensing/BoardofPharmacy/PrescriptionDrugMonitoringProgram>).

### References

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