

Utilization of care by infants with neonatal abstinence syndrome in Delaware



Michele K Savin, MSN, NNP-BC
Thomas Jefferson University
Christiana Care Health System



Abstract

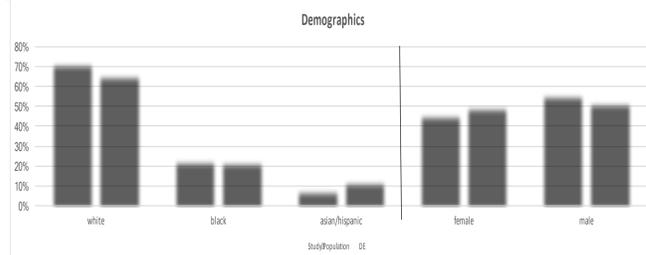
From 1999-2013, the nationwide incidence of neonatal abstinence syndrome (NAS) due to maternal drug use rose from 1.5/1000 to 6/1000 hospital births. There is a dearth of information regarding what happens to these children when they are discharged. This Practice Inquiry Project utilized existing Delaware Medicaid data to retrospectively explore the utilization of services and gaps in care for the infant with NAS in the first year of life.

Key findings include less than expected well-child visits and immunizations along with higher hospital re-admission rates. This represents missed opportunities for care, also demonstrating the need for more robust social supports. Potential for prospective outpatient management and avenues for future research are outlined.

Project Purpose

- 1) Identify health system utilization after discharge for infants with a diagnosis of NAS
- 2) Identify points of interaction with the system of care
- 3) Quantify routine and non-routine health care interactions
- 4) Recognize existing gaps in care and recommend changes for improved provision of care

Demographics



There are 522 babies in the full data set, which represent all infants born in Delaware January 1, 2012 through December 31, 2014 who received a diagnosis of NAS at birth and were insured by Medicaid.

Four infants without inpatient or discharge codes were excluded from the analysis. This left 518 infants whose initial length of stay (LOS) could be ascertained. Fifteen percent (n=78) had a diagnosis of prematurity. The total number of infants and lengths of stay increased over time for all demographics. Twenty percent (n=105) of infants had LOS <5 days.

Mean Length of Stay for Infants with NAS

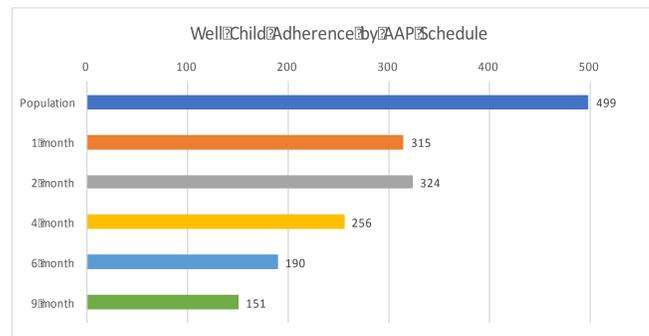
Year	N	Mean LOS in days	SD
2012	141	14.1	13.7
2013	149	18.7	21.6
2014	228	21.6	21.6

Expected Utilization of Care

Nineteen infants without codes after discharge were excluded from the analysis. These infants were likely moved to another form of insurance or re-located out of state. The final n=499.

Any well-child visit within two weeks before or after the recommended age was considered to meet the AAP well-child requirement.

Immunization coding did not allow for delineation of which vaccine was received, so information is presented in aggregate.



- One month rates were low and affected by the initial hospitalization with 18% (n=90) of the cohort still hospitalized at 30 days and 8% (n=40) at 45 days.
- The highest rate of adherence to the AAP recommended schedule was at two months of age, when 65% (n=324) of infants met the AAP goal.
- At six months, the rate was 38% (n=190) which is below the published rate for a cohort of Medicaid eligible children who had a six month visit rate of 88%.
- Adherence decreased over time and was 30% (n=151) at nine months. As the data ended at 365 days of life, 12-month adherence was not calculated.
- Two percent of children never received a well-child visit in the first 365 days of life.

Immunizations

- Children received immunizations at both well visits and visits to the primary care office for other reasons.
- The total number of infants who received any immunization in the first year of life was 459, or 92% which is inclusive of immunizations received during the birth hospitalization.
- The mean number of immunizations received per child was 12.6 with a standard deviation of 6.6.
- Eight percent (n=40) never received any immunization.
- Fifty-eight percent (n=23) of those not receiving immunizations were Caucasian and 42 percent (n= 17) were Black/Asian/Hispanic.
- Of these 40 infants, only 33 had a well visit, 35 had a primary care visit, and 16 visited the emergency room.
- This lack of immunization is higher than the baseline US rate of one percent (CDC, 2014) and represents a lost opportunity for well-child care.

Unexpected Utilization of Care

- Fifty-two percent (n=261) had a visit to the Emergency Department during the first year of life. The mean number of visits per child was 2.1 with a standard deviation of 1.5.
- Seven percent (n=33) visited an urgent care clinic.
- Fifteen percent (n=74) of infants needed hospitalization in the first year of life which is higher than the baseline for term infants of 9.5%.
- Of those infants admitted, 78% (n=58) had one admission, and 22% (n=16) had two or three admissions.
- In the emergency department, the most frequent diagnoses included fever and upper respiratory complaints, otitis media, vomiting, head injuries, and "other unspecified morbidity and mortality".
- Reasons for urgent care use included otitis media, respiratory infections and colds, conjunctivitis, contusions and rashes.
- Hospital admission diagnoses included any respiratory infection not related to respiratory syncytial virus, infections of a non-respiratory nature, respiratory syncytial virus-related infection, failure to thrive and unexpected injury or trauma.
- Although these last two diagnoses were infrequent, they are of high concern in this at-risk population.

Primary Reasons for Utilization of Care at Differing Sites

Rank	INPATIENT ADMISSION 15% (n=74)	EMERGENCY DEPARTMENT 52% (n=261)	URGENT CARE 7% (n=33)
1	Any respiratory infection, non RSV	Fever and upper respiratory complaints	Otitis media
2	Any non- respiratory infection	Otitis media	Respiratory infections and colds
3	RSV	Vomiting	Conjunctivitis
4	Failure to thrive	Head injuries	Contusions
5	Unexpected injury or trauma	Other unspecified morbidity and mortality	Rashes

Conclusions

NAS is a clinical diagnosis and not every infant who has prenatal exposure to opioids will go on to require treatment or should have the NAS label.

Ninety-seven percent of children had some form of well-child or primary care visit. Over time the rate of attendance at a well-child visit dropped to only 30%. Many opportunities for education and for developmental surveillance are being missed in this higher risk population.

Eight percent of NAS infants studied never received any vaccinations, compared with a recent national average of less than one percent.

The baseline hospitalization rate for term infants in the first 365 days of life is 9.5%; in this cohort, 15% required admission with 22% of those infants requiring more than one admission. Visits to the emergency department for head trauma and other morbidity and mortality were noted.

Findings of this nature present an opportunity for education and demonstrate the need for social supports to enable safe environments.

Implications

In 2017 opioid use and its consequences continue to grow; real-time surveillance would inform planning and decision making for programming and allocation of resources.

Lack of attendance at well-child visits means a loss of preemptive well care, developmental screening and early intervention.

Risks exist for physical and developmental delays which increase burden on school systems and social service systems.

Practitioners must work to improve the structure around well visits and immunizations, perhaps through primary medical homes, to allow for streamlined patient centered processes which create better outcomes.

Full engagement in primary care may also decrease the need for urgent and emergency room care.

Advanced practice nurses are poised to make a difference in the lives of mothers and infants with substance use disorders through education and engagement from the time pregnant mothers enter the health care system.

Future research should include real-time and prospective analysis of healthcare utilization with a case management focus, research to examine changes in utilization of urgent care, work to inform plans of safe care, and research into how to best support the substance exposed mother-infant dyad and their families.

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