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Utilization of Care by Infants with Neonatal Abstinence Syndrome in Delaware

Michele K Savin, MSN, APRN, NNP-BC



Introduction: Neonatal Abstinence Syndrome



Purpose and Objectives

- Opioid use is rising with one infant in this country born *dependent* on opioids every 25 minutes.
- Numerous studies have looked at the initial hospital care of these infants with good evidence for standardized treatments.
- There is a dearth of information regarding post discharge care.
- The purpose of this Practice Inquiry Project is to utilize existing Delaware Medicaid data to retrospectively explore the utilization of services and gaps in care for the infant with neonatal abstinence syndrome (NAS) in the first year of life.

Conceptual Model: Donabedian



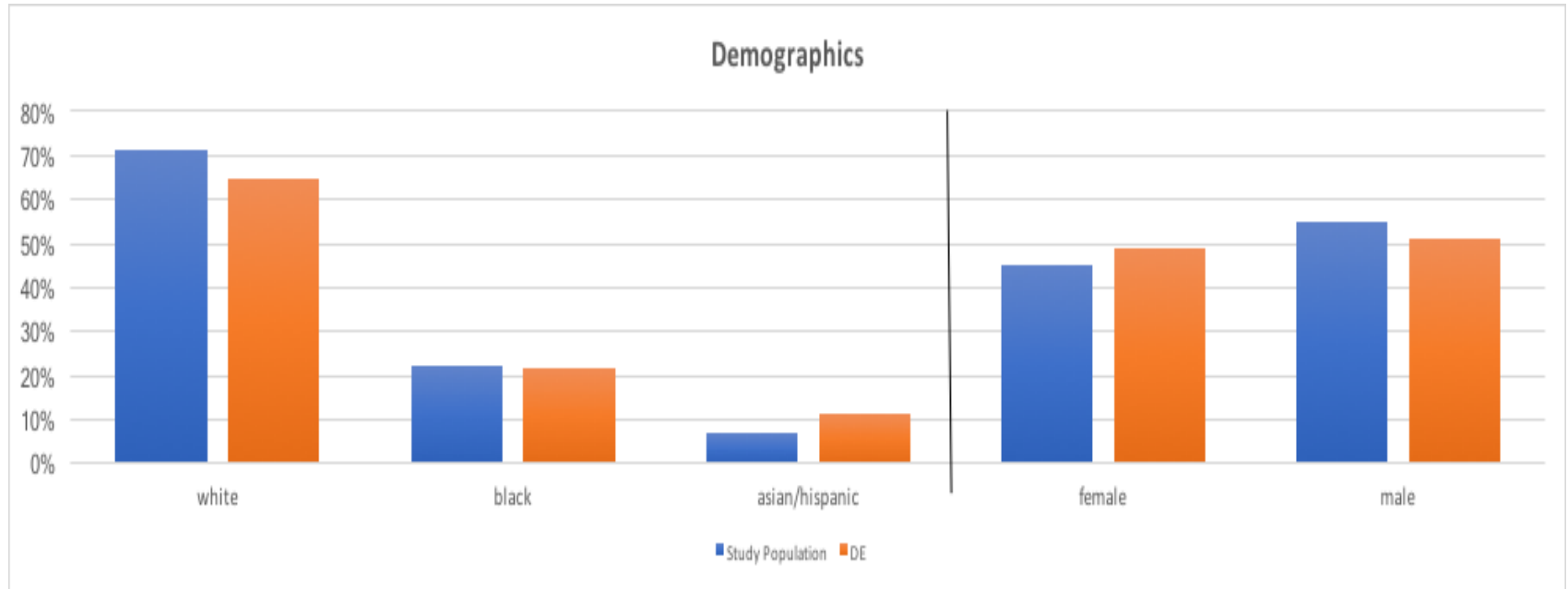
Methods

- De-identified Medicaid data set from January 1, 2012-December 31, 2014
- All infants with ICD-9 code of NAS identified
- All associated claims for 365 days after birth analyzed
- Subset analysis included gestational age, sex, race, place of service, type of service, and type of provider

- Data were analyzed using the SPSS version 24 (2016) statistical program and expertise from the Value Institute at Christiana Care Health System

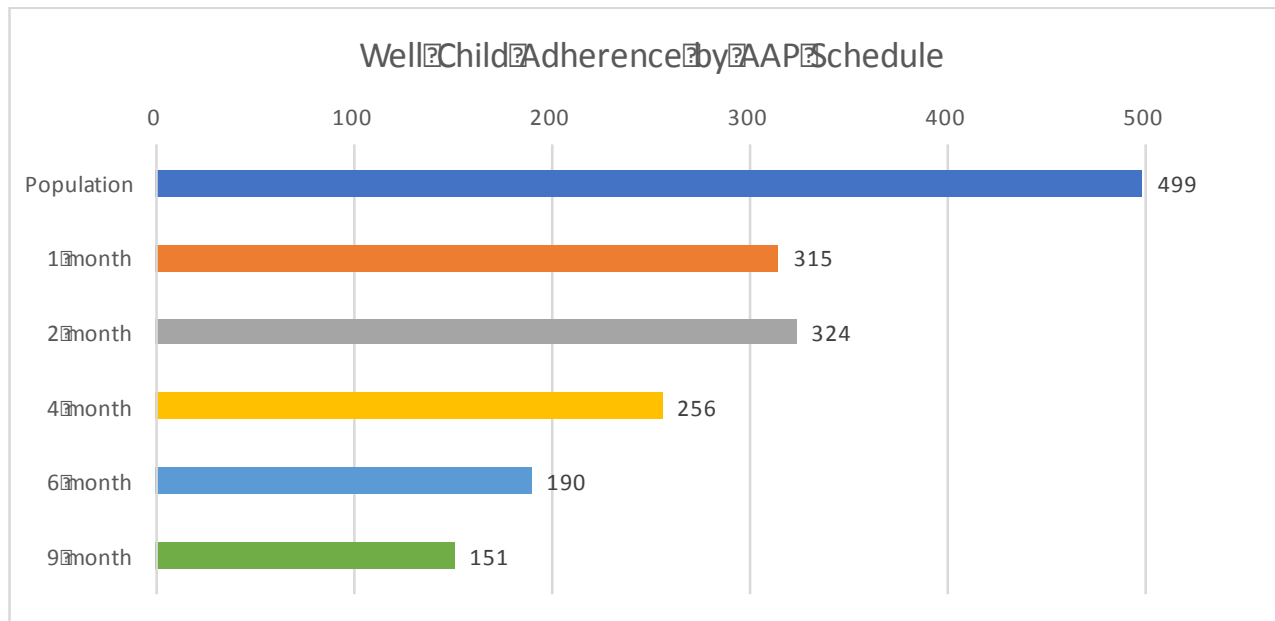
Results

- 522 babies
 - 15% (n=78) preterm



- Final n=499 for post discharge analysis

Results



Results

Outpatient Utilization of Care During the first Year of Life for Infants with NAS

Site	n	Mean No. Visits	SD
ED visits	261	2.1	1.5
Urgent Care	33	1.5	1.1
PCP visit (not well-visit)	486	8.8	8.4
Well Child visit	489	4.8	2.5

Results

Primary Reasons for Utilization of Care at Differing Sites

Rank	Inpatient 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

Implications

- 38% (n=191) of infants had a six month well visit; this decreased to 30% (N=151) at 9 months.
- 8% (n=40) of NAS infants studied never received any vaccinations, despite most having been seen by PCP.
- Urgent care centers have increased 50% since 2012.
- ED diagnoses included head trauma and other morbidity and mortality.
- 15% (n=75) of the cohort required re-admission with 22% (n=15) of those infants requiring more than one re-admission.

Limitations

- Dataset was retrospective and de-identified
- Medicaid infants only
- Challenges with coding:
 - some questions such as weight and gestational age of preterm infants were not able to be determined
 - some concern regarding accuracy of the data including primary and secondary diagnoses being interchanging
- 23 infants were unable to be analyzed
- Nine percent of DE substance exposed infants in DFS care
 - Care requirements may skew data in the positive direction

Recommendations

- Practitioners must work to improve the structure around well visits and immunizations, 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.

References

- Adams, J., Kenney, T., Frantz, T, Craig, M., Eden, R., Bellante, A., Silber, A., McCarroll, M.L., von Gruenigen, V.E., Gothard, M.D. (2016). Comparison of outcomes in maternal opioid medical support using centering pregnancy versus maternity care home. *Journal of Pregnancy and Child Health*, 3 (4) DOI:10.4172/2376-127X.1000271
- American Academy of Pediatrics Council on foster care, adoption, and kinship care, committee on adolescence, and council on early childhood. (2015). American Academy of Pediatrics Policy Statement Health Care Issues for Children and Adolescents in Foster Care and Kinship Care. American Academy of Pediatrics. *Pediatrics*, 136 (4). <http://pediatrics.aappublications.org/content/136/4/e1131>
- AMN Healthcare (2016). *Convenient Care: Growth and Staffing Trends in Urgent Care and Retail Medicine*. Retrieved from: [https://www.amnhealthcare.com/uploadedFiles/MainSite/Content/Healthcare_Industry_Insights/Industry_Research/AMN%2015%20W001_Convenient%20Care%20White_paper\(1\).pdf](https://www.amnhealthcare.com/uploadedFiles/MainSite/Content/Healthcare_Industry_Insights/Industry_Research/AMN%2015%20W001_Convenient%20Care%20White_paper(1).pdf)
- Centers for Disease Control (2014). *U.S. Infant Vaccination Rates High* [Press Release]. Retrieved from <https://www.cdc.gov/media/releases/2014/p0828-infant-vaccination.html>
- Caitlin A. (2012). Call for improved care for the substance-positive mother. *Advances in Neonatal Care*. 12:286-287.
- Charles, M.K., Cooper, W.O., Jansson, L.M., Dudley, J., Slaughter, J.C., & Patrick, S.J. (2017). Male Sex Associated With Increased Risk of Neonatal Abstinence Syndrome. *Hospital Pediatrics* 7 (6) 328-334.
- Donabedian A. (1966). Evaluating the quality of medical care. *Milbank Memorial Fund Quarterly*. 44(3), 166-206.
- Hogan, D.M. (2007). The impact of opiate dependence on parenting processes: Contextual, physiological and psychological factors. *Addiction Research Theory*, 15:617-635.
- Hudak ML, Tan RC; Committee on Drugs; Committee on Fetus and Newborn; American Academy of Pediatrics. Neonatal drug withdrawal. *Pediatrics* 2012;129:e540-60. <https://doi.org/10.1542/peds.2011-3212>
- Hussaini, S.K. (2017, May) Neonatal abstinence syndrome: Delaware, 2010-2013. Research Brief. Delaware Health and Social Services, Division of Public Health.
- Ko, J.Y., Patrick, S.P., Tong, V.T., Patel, R., Lind, J.N., & Barfield, W.D. (2016). Centers for Disease Control and Prevention (CDC). Incidence of Neonatal Abstinence Syndrome – 28 States, 1999-2013. *MMWR Surveillance Summary* 65: 31, 799-802.
- Kocherlakota, P. (2014). Neonatal Abstinence Syndrome. *Pediatrics*, 134 (2) e547-561.
- Logan, B.A., Brown, M.S., & Hayes, M.J. (2013). Neonatal abstinence syndrome: treatment and pediatric outcomes. *Clinical Obstetrics and Gynecology*, 56 (1) 186-192.
- Maguire, D.J., Taylor, S., Armstrong, K., Shaffer-Hudkins, E., Germain, A.M., Brooks, S.S., Cline, G.J., Clark, L. (2016). Long-Term Outcomes of Infants with Neonatal Abstinence Syndrome. *Neonatal Network*, 35 (5), 277-286.
- Patrick, S.W., Burke, J.F., Biel, T.J., Auger, K.A., Goyal, N.K., & Cooper, W.O. (2015). Risk of hospital readmission among infants with neonatal abstinence syndrome. *Hospital Pediatrics*, 5;513-519.
- Paulozzi, L.J., Strickler, G.K., Kreiner, P.W., Koris, C.M. (2013). Centers for Disease Control and Prevention (CDC). Controlled substance prescribing patterns--prescription behavior surveillance system, eight states. *MMWR Surveillance Summary* 64:1-14.
- Ray, K.N. & Lorch, K.A. (2013). Hospitalization of early preterm, late preterm, and term infants during the first year of life by gestational age. *Hospital Pediatrics*, 3 (3), 194-203.
- Savin, M. K. & Paul, D.A. (2016). Opioid exposed Mothers and Infants in Delaware: Clinical and Legal Considerations. *Delaware Journal of Medicine*, 88 (4) 110-114.
- Statistical Atlas, (2015). *US Census race and ethnicity in Delaware*. Retrieved from <http://statisticalatlas.com/state/Delaware/Race-and-Ethnicity>
- Uebel, H., Wright, I.M., Burns, L., Hilder, L., Bajuk, B., Breen, C., Abdel-Latif, M.E., Feller, J.M., Falconer, J., Clews, S., Eastwood, J., & Oei, J.L. (2015). Reasons for re-hospitalization in children who had neonatal abstinence syndrome. *Pediatrics*, 136 (4) eB11-20.
- Wachter, R.M. (2012). *Understanding Patient Safety*. McGraw Hill, New York, NY.
- Van Berckelaer, A.C., Mitra, N., & Pati, S. (2011). Predictors of well child care adherence over time in a cohort of urban Medicaid-eligible infants. *BMC Pediatrics* 11:36-44.

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