



Using Electronic Medical Health Records (EHR) to identify and describe Neonatal Abstinence Syndrome (NAS) in a rural clinic population



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Background

Infants exposed to addictive substances in utero usually exhibit Neonatal Abstinence Syndrome (NAS). NAS is usually observed in the newborn nursery within the first few days of life. The symptoms include tremors, irritability, poor feeding, high pitched cry, and multiple other symptoms depending on the substance used by the mother during pregnancy (Finnegan, 1985).

NAS is a massive problem in the pediatric population. The impact of maternal drug use and drugs to prevent withdrawal complications is yet to be fully realized. The incidence of NAS is rising in the United States. There was a five-fold increase in the proportion of babies born with NAS from 2000 to 2012. (Abuse, National Institute on Drug, 2015). The proportion of infants diagnosed with NAS who were from rural counties increased from 12.9% in 2003/2004 to 21.2% in 2012/2013 (P < .001). (Villapiano, Winkelman, Kozhimannil, Davis, & Patrick, 2017).

In West Virginia, NAS significantly increased from 7.74 to 31.56 per 1,000 live births per year between 2007 and 2013, (Stabler et al., 2017). The 2017 annual incidence rate of NAS was 50.6 per 1000 live births per year for WV. (Umer et al., 2018). This has caused a massive burden on the foster care system of West Virginia (McCormick, L. (2017).

The impact of intrauterine exposure on pediatric patients is a concern for health care providers in WV. Poor growth and development (Bier, Finger, Bier, Johnson, & Coyle, 2015; Lamy, S., Laqueille, X., & Thibaut, F. (2015).), cognitive issues (Jaeger, Suchan, Schölmerich, Schneider, & Gawehn, 2015), and risk for abuse (Weberling, Forgays, Crain-Thoreson, & Hyman, 2003) are only a few of the complications that providers must diagnose and treat. NAS patients must be identified, screened, and treated during the pediatric years to facilitate improved outcomes (Knopf, 2016; Lee, Hulman, Musci, & Stang, 2015).

The purpose of this research is to evaluate the ability of rural providers to use EHRs to identify, describe, and monitor aspects of NAS across the pediatric health span.

Methods

A De-Identified Data Sharing Agreement was obtained for this project from Robert C. Byrd Clinic. The clinic provided the research team with de-identified and validated data of patients that had the NAS diagnosis (ICD 9 code 779.5 and ICD 10 codes P 96.1; 96.2). HIPPA compliance was maintained. Data were extracted using Intergy Electronic Medical Records.

Data Extracted:

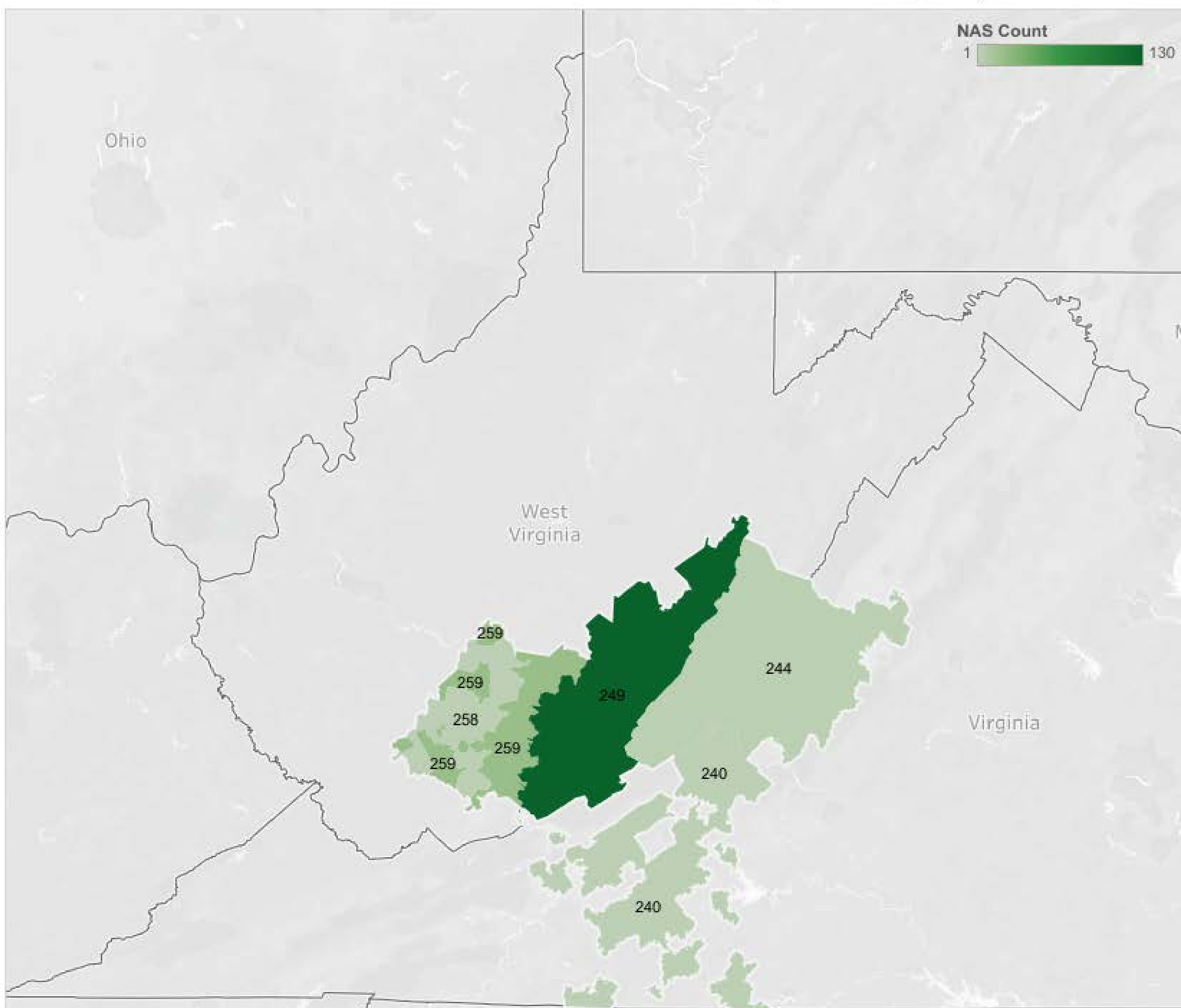
Demographics: age, gender, zip 3 digits, payer, ethnic status
Clinical characteristics: additional diagnosis, chronic medications, referrals to outside agencies or providers, immunization status, attritional rate or current patients standing, time of last visit, record of foster care, weight for length or BMI percentile, developmental milestone status, secondhand smoke, appointment history.

Results

Demographics Race and Gender

	Caucasian	Black	Hispanic	Other	Bi-racial (Caucasian/Black)
Gender					
Male	80	1	0	1	3
Female	65	1	1	0	3
Total	145	2	1	1	6

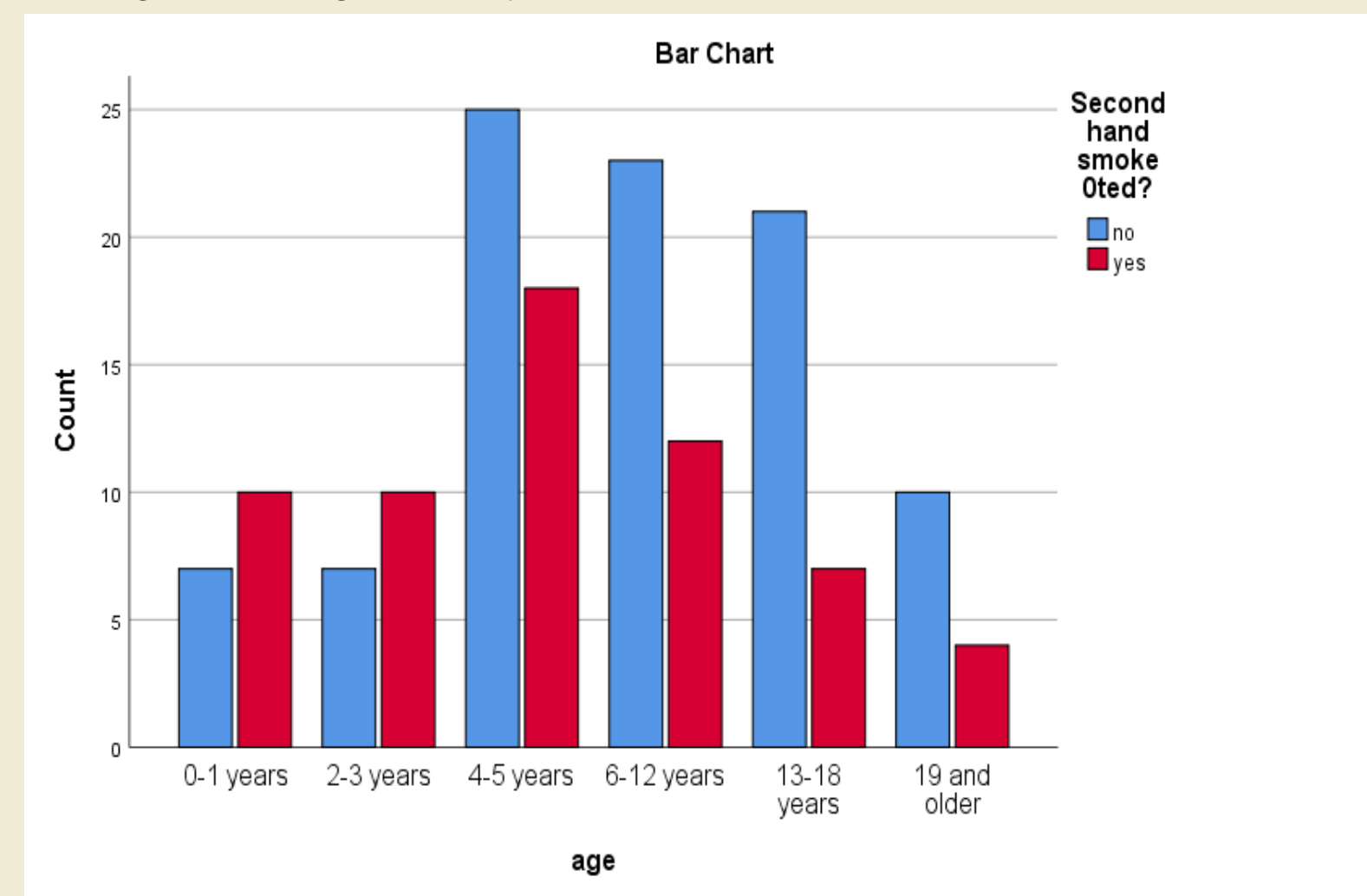
Robert C. Byrd Clinic
Neonatal Abstinence Syndrome (NAS)



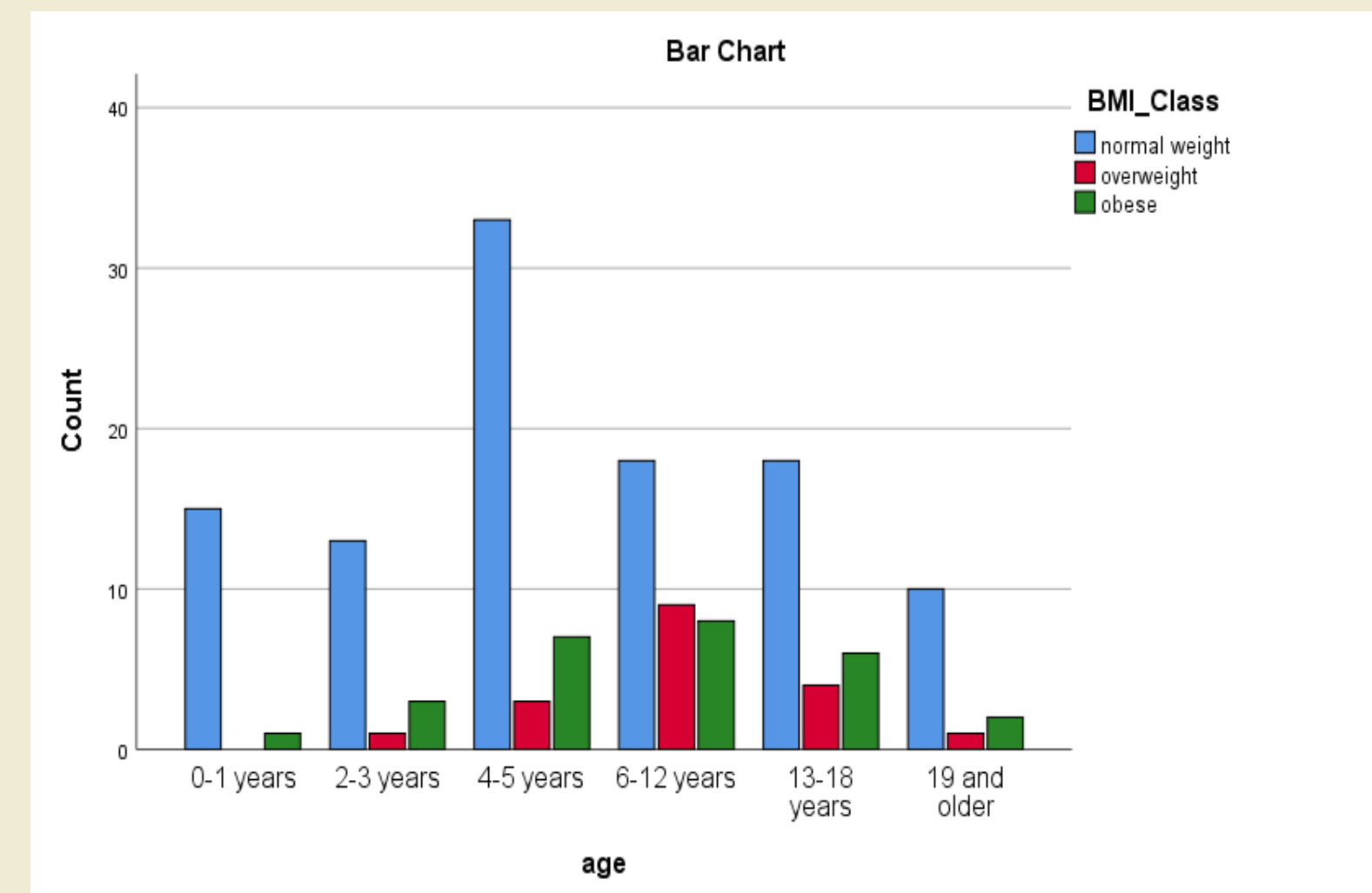
Results (cont.)

151 charts with required diagnosis code reviewed and analyzed using SPSS. T Payers of the group were 57% state insured (West Virginia Medicaid, Unicare, Chips). Private insured were 43% and <1% were self pay.

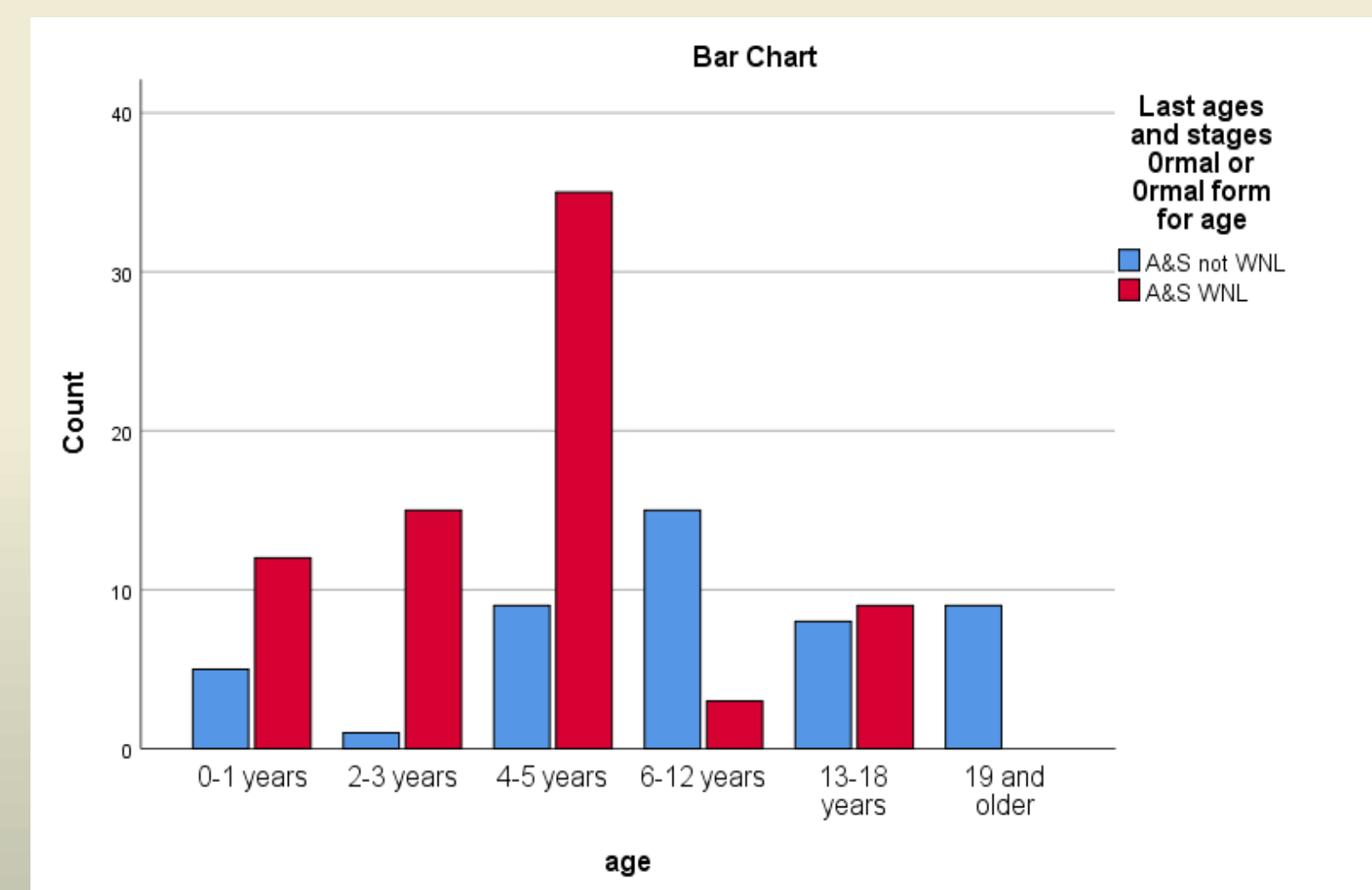
Second hand smoke higher among the 4-5 year olds.



Growth: Normal BMI percentile highest among the 4-5 year old group. Obesity/overweight highest in the 6-12 age group.



Development: Ages and Stages Developmental screen was abnormal more in the age groups of 6-12, 13-18, and 19 and older.



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Foster care: Among the age groups, foster care was highest among the ages 0-3 years.

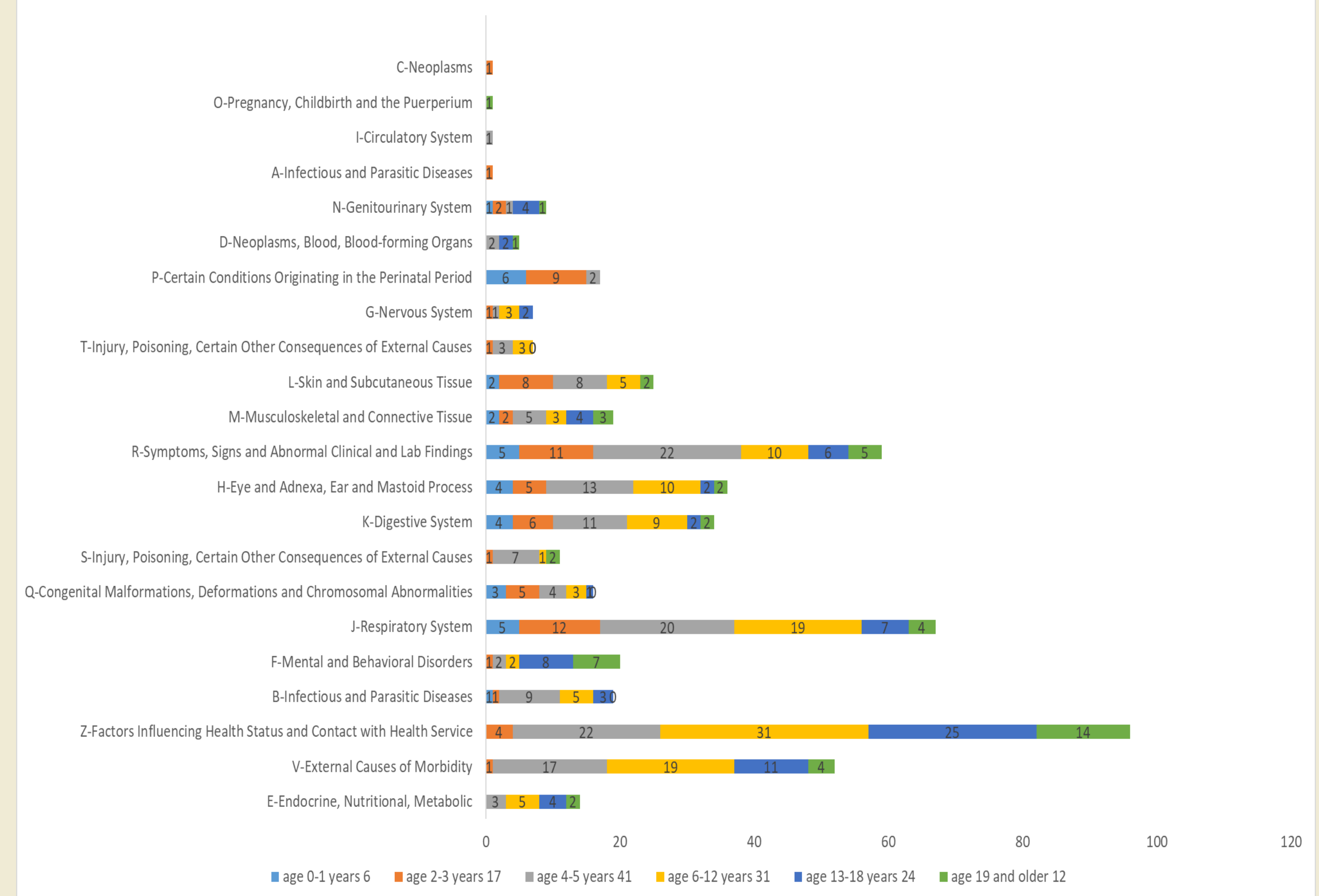
No Show rate: Among the 4-12 age groups highest amount of no show visits.

Diagnoses: Most frequent was well visits fairly well distributed among the ages. Respiratory illness next frequent diagnosis with highest in the 4-5 age group. Eye and ear diagnosis were noted as a recurrent diagnosis with the largest number of diagnosis amount the group that were 4-5 year old. Also the age of most second hand smoke reported. Diagnosis related to mental health were highest in the 6-18 age group.

Acknowledgements

This project was supported by the National Institute Of General Medical Sciences, U54GM104942 and the West Virginia School of Osteopathic Medicine. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or WVSOM.

Results (cont.)



Conclusions

The EHR can assist in describing the NAS population in a rural primary care center. While many of the results align with the usual pediatric population, several points are noted and of importance. Foster care is highest in the younger population. This could be related to the enormous amount of care any infant requires, especially those with intrauterine exposure to illicit drugs and medications for withdrawal. Since infants with NAS are usually fussier than infants who do not have NAS, they are at a higher risk for abuse. Pediatric providers are vigilant in this age group and this confirms the need for frequent evaluations and additional support to the caregiver. The decrease of foster care in older children could be related to the fact that they are placed with a family member or foster care parent that may adopt them if parental rights are terminated. Another explanation is that the biological family had stabilized.

The literature supports the premise that children with NAS have a higher risk for issues in school. ADD, behavior issues, and learning disabilities may surface in this age group as scholastic challenges are encountered. Pediatric providers can alert the families to observe for any academic issues early on without labeling the child. Earlier interventions in school have a higher rate of long term improvement.

Tagging the patients with NAS can help the primary care center manage care better by following them in the practice to make sure that care is maintained and if they have left the practice, providers can attempt to send records and promote continuity in care. Tracking the no show rates will assist providers to follow up and see if the office can contact the families to see if the child is still in the area and in our practice. Child Protection can also be involved if medical neglect is noted.

Zip codes can help identify geographical areas that have a higher percentage of NAS children. Higher percentages could promote needs assessments and empower communities to provide more resources for children impacted by NAS. More work is needed to evaluate the ability to replicate the process in a new EHR system in our clinic. Although this is the first time to pull this diagnosis, we need more data over longer periods of time to see the effectiveness of tagging and following the patients as they age through the system.

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