



ASPE ISSUE BRIEF

HHS OFFICE OF THE ASSISTANT SECRETARY FOR PLANNING AND EVALUATION
OFFICE OF BEHAVIORAL HEALTH, DISABILITY, AND AGING POLICY

TRENDS IN HOSPITAL READMISSION AND EMERGENCY DEPARTMENT VISIT AMONG INFANTS BORN WITH NEONATAL ABSTINENCE SYNDROME

HIGHLIGHTS

This paper examines trends in hospital readmission and emergency department visits among infants with NAS between 2008 and 2017 in the United States, using a multi-state Medicaid claims database. Key findings include the following:

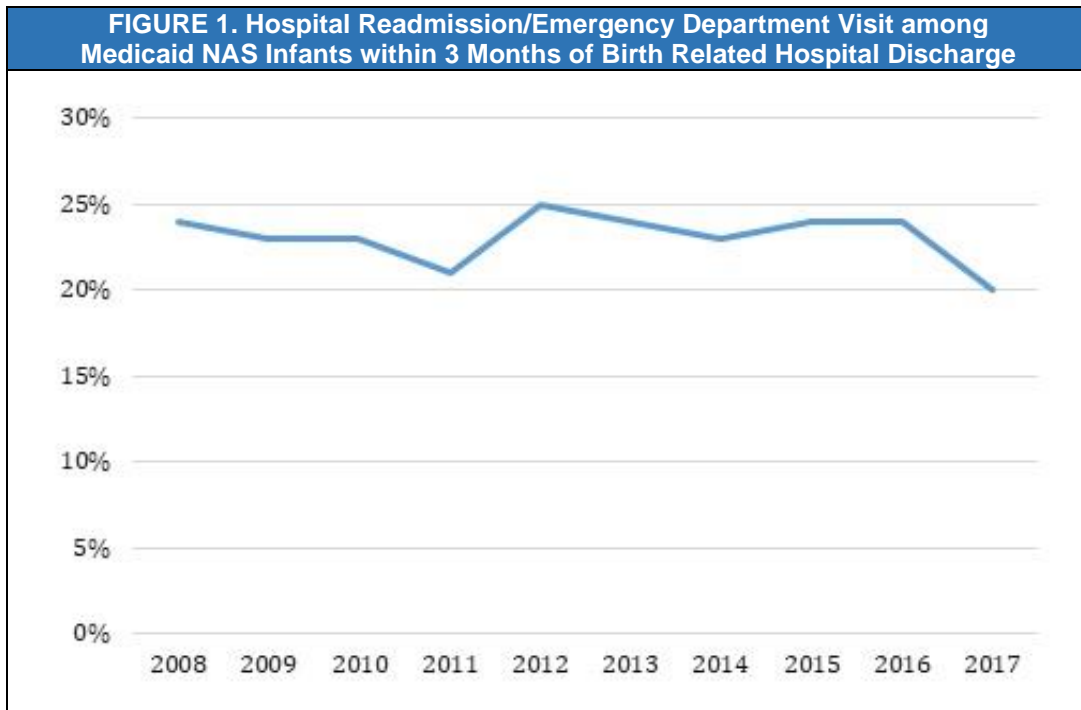
- From 2008 through 2017, nearly 25% of infants diagnosed with NAS were readmitted or seen in an emergency department within 90 days of discharge.
- The rate within this timeframe was highest in 2012 and lowest in 2017, with 25% and 20% of NAS infants respectively experiencing readmission or emergency department visits.
- Drug withdrawal syndrome was among the four most common reasons for readmission or emergency department visitation every year from 2008 through 2017.

Introduction

Over the past decade the rates of infants diagnosed with Neonatal Abstinence Syndrome (NAS) have increased rapidly, coinciding with the rise in opioid prescribing and opioid-related overdose deaths (Wahlen et al., 2019). Despite the recent increases in infants diagnosed with NAS and its associated health care services utilization, little is known about the trends in hospital readmissions rates or emergency department visits among NAS infants in the United States. Hospital readmissions rates are often used as both a quality measure to assess whether the initial hospital discharge protocol was safe and effective and a general evaluation of the effectiveness of the treatment regimen for infants with NAS (Patrick et al., 2015). In this report, a large Medicaid claims database is used to estimate the trends in hospital readmission rates and emergency department visits among NAS infants between 2008 and 2017.

Significant Proportion of Infants Born with NAS Experienced Hospital Readmission or Emergency Department Visit within 90 Days of Discharge

Close to a quarter of all NAS infants covered under Medicaid experienced a hospital readmission or emergency department visit within 90 days of their initial birth-related hospital discharge between 2008 and 2017 (Figure 1). This rate remained steady throughout the study period, with the highest rate (25%) occurring in 2012 and reaching the lowest (20%) in 2017. The primary reasons for hospital readmission and emergency department visit between 2008 and 2017 include conditions related to respiratory infections, fever, cough, and drug withdrawal syndrome (Table 1).



The study used IBM Watson Health MarketScan Multi-State Medicaid claims database (2008-2017). The sample includes all infants (ICD-9 livebirth codes V30-V39 and ICD-10 livebirth codes Z37-Z38) diagnosed with NAS (ICD-9 code 779.5 and ICD-10 code P961) born between 2008 and 2017. The sample size ranged from 989 NAS infants in 2008 to 5,027 NAS infants in 2017. Rates of hospital readmission or emergency department visit among NAS infants were measured by whether the infants had any inpatient hospitalization or had an emergency department encounter within 90 days of release from their birth hospitalization for each study year.

Discussion

Between 2008 and 2017, approximately a quarter of NAS infants covered under Medicaid experienced a hospital readmission or an emergency department visit within three months of their initial birth-related hospital discharge. This rate remained relatively steady throughout the study period and conditions related to drug withdrawal syndrome was one of the primary reasons for the hospital readmission or the emergency department visit.

The increase in the rates of infants diagnosed with NAS and the steady rate of hospital readmission in the midst of the opioid crisis underscores the public health significance of the issue. The first-line of treatment for NAS infants usually includes creating a quiet and soothing environment, rooming-in with the mother, breastfeeding and increased mother-infant bonding, protocols that require creating a supportive environment for both the infants and the substance-affected mothers. Thus, the relatively high rate of hospital readmissions and emergency department visits, especially for drug withdrawal symptoms, highlights the need of maybe providing more supportive services to this particularly vulnerable subset of families.

This study has several potential limitations. The number of Medicaid states represented in the MarketScan data varies from year to year and the trends in hospital readmission and emergency department visits observed in this study could be a function of that. Similarly, the MarketScan Medicaid database is not nationally representative, thus the rates observed in the study might not be generalizable to the entire population of infants diagnosed with NAS covered under Medicaid. However, this limitation is not unique to MarketScan, and is also applicable to other administrative claims databases.

Hospitalization and emergency department encounters appear to be common among NAS infants. Establishment of evidence-based protocols for both in-hospital and post-discharge treatment along with expansion of supportive resources for mothers and caregivers should be considered to reduce this risk. Future policy developments and activities targeted at NAS infants could potentially benefit from focusing on hospital readmissions rates.

References

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TABLE 1. Top 5 Frequent Reasons for Hospital Readmission or Emergency Department Visit among Medicaid NAS Infants: 2008-2017		
ICD-9/ICD-10 Code for Reasons for Hospitalization/Emergency Department Visit	N	Events
Year: 2008		
465.9 Acute upper respiratory infections of unspecified site	48	151
779.5 Drug withdrawal syndrome in newborn	39	54
786.2 Cough	35	61
779.89 Other specified conditions originating in the perinatal period	28	34
780.60 Fever, unspecified	25	62
Year: 2009		
780.60 Fever, unspecified	68	275
465.9 Acute upper respiratory infections of unspecified site	61	247
786.2 Cough	58	123
779.5 Drug withdrawal syndrome in newborn	49	67
079.99 Unspecified viral infection	40	143
Year: 2010		
780.60 Fever, unspecified	61	242
465.9 Acute upper respiratory infections of unspecified site	59	270
530.81 Esophageal reflux	41	90
787.03 Vomiting alone	40	106
779.5 Drug withdrawal syndrome in newborn	40	47
Year: 2011		
780.60 Fever, unspecified	74	420
465.9 Acute upper respiratory infections of unspecified site	67	230
786.2 Cough	50	163
787.03 Vomiting alone	47	142
779.5 Drug withdrawal syndrome in newborn	41	42
Year: 2012		
786.2 Cough	193	559
465.9 Acute upper respiratory infections of unspecified site	192	711
780.60 Fever, unspecified	158	757
478.19 Other disease of nasal cavity and sinuses	125	404
779.5 Drug withdrawal syndrome in newborn	103	155
Year: 2013		
786.2 Cough	207	755
465.9 Acute upper respiratory infections of unspecified site	194	854
780.60 Fever, unspecified	175	714
478.19 Other disease of nasal cavity and sinuses	137	491
779.5 Drug withdrawal syndrome in newborn	122	230
Year: 2014		
465.9 Acute upper respiratory infections of unspecified site	212	882
786.2 Cough	202	508
780.60 Fever, unspecified	194	779
787.03 Vomiting alone	149	484
779.5 Drug withdrawal syndrome in newborn	112	197
Year: 2015		
R05 Cough	77	212
J069 Acute upper respiratory infection, unspecified	74	263
R0981 Nasal congestion	56	194
P961 Neonatal withdrawal symptoms from maternal use of drugs of addiction	51	55
R509 Fever, unspecified	46	264

TABLE 1 (continued)		
ICD-9/ICD-10 Code for Reasons for Hospitalization/Emergency Department Visit	N	Events
779.5 Drug withdrawal syndrome in newborn	78	132
465.9 Acute upper respiratory infections of unspecified site	69	272
780.60 Fever, unspecified	56	222
779.89 Other specified conditions originating in the perinatal period	52	106
786.2 Cough	50	118
Year: 2016		
R05 Cough	171	418
J069 Acute upper respiratory infection, unspecified	150	591
P961 Neonatal withdrawal symptoms from maternal use of drugs of addiction	145	192
R509 Fever, unspecified	140	667
R0981 Nasal congestion	100	283
Year: 2017		
J069 Acute upper respiratory infection, unspecified	122	516
R05 Cough	116	284
R509 Fever, unspecified	82	580
R0981 Nasal congestion	74	207
R1110 Vomiting, unspecified	72	207

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NEONATAL ABSTINENCE SYNDROME

Reports Available

Trends in Hospital Readmission and Emergency Department Visit among Infants Born with Neonatal Abstinence Syndrome Issue Brief

HTML <https://aspe.hhs.gov/basic-report/trends-hospital-readmission-and-emergency-department-visit-among-infants-born-neonatal-abstinence-syndrome-issue-brief>

PDF <https://aspe.hhs.gov/pdf-report/trends-hospital-readmission-and-emergency-department-visit-among-infants-born-neonatal-abstinence-syndrome-issue-brief>

Use of Outpatient Pharmacological Treatment Among Infants Born with Neonatal Abstinence Syndrome: Medicaid 2008-2017 Issue Brief

HTML <https://aspe.hhs.gov/basic-report/use-outpatient-pharmacological-treatment-among-infants-born-neonatal-abstinence-syndrome-medicaid-2008-2017-issue-brief>

PDF <https://aspe.hhs.gov/pdf-report/use-outpatient-pharmacological-treatment-among-infants-born-neonatal-abstinence-syndrome-medicaid-2008-2017-issue-brief>

Utilization of Mental Health Services among Children Diagnosed with Neonatal Abstinence Syndrome at Birth Issue Brief

HTML <https://aspe.hhs.gov/basic-report/utilization-mental-health-services-among-children-diagnosed-neonatal-abstinence-syndrome-birth-issue-brief>

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