Utilization of care by infants with neonatal abstinence syndrome in Delaware

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Introduction: Neonatal Abstinence Syndrome

• Opioid use is rising with one infant in this country born dependent on opioids every 25 minutes.
• Numerous studies have looked at the 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.

Purpose and Objectives
Conceptual Model: Donabedian

Structure
How is care organized?
Stable elements of care that make-up the health care system

Process
What is done?
Interaction between patients and providers

Outcome
What happens to the patient’s health?
End results of health care practices and interventions

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

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

<table>
<thead>
<tr>
<th>Site</th>
<th>n</th>
<th>Mean No. Visits</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED visits</td>
<td>241</td>
<td>2.1</td>
<td>1.5</td>
</tr>
<tr>
<td>Urgent Care</td>
<td>12</td>
<td>1.5</td>
<td>1.1</td>
</tr>
<tr>
<td>PCP visit (not well-visit)</td>
<td>486</td>
<td>8.8</td>
<td>8.4</td>
</tr>
<tr>
<td>Well Child visit</td>
<td>489</td>
<td>4.8</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Primary Reasons for Utilization of Care at Differing Sites

<table>
<thead>
<tr>
<th>Rank</th>
<th>Inpatient T15 (n=74)</th>
<th>Emergency Department ED (n=241)</th>
<th>Urgent Care T15 (n=12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Any respiratory infection, non-RI</td>
<td>Fever and upper respiratory infection</td>
<td>Otitis media</td>
</tr>
<tr>
<td>2</td>
<td>Any non-respiratory infection</td>
<td>Otitis media</td>
<td>Respiratory infections and colds</td>
</tr>
<tr>
<td>3</td>
<td>RSV</td>
<td>Vomiting</td>
<td>Conjunctivitis</td>
</tr>
<tr>
<td>4</td>
<td>Failure to thrive</td>
<td>Head injuries</td>
<td>Croup</td>
</tr>
<tr>
<td>5</td>
<td>Unexpected injury or illness</td>
<td>Other unspecified morbidity and mortality</td>
<td>Rashes</td>
</tr>
</tbody>
</table>
### 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.
  - Recent National average is <1%
- 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

### Conclusions

- 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.
- 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.
- Many opportunities for education and for developmental surveillance are being missed in this higher risk population.
- Lack of attendance at well-child visits means a loss of preemptive well care, developmental screening and early intervention. Findings of this nature present an opportunity for education and demonstrate the need for social supports to enable safe environments.
- Risks exist for physical and developmental delays which increase burden on school systems and social service systems.
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 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

- U.S. Census Bureau (2013). Race and ethnicity in Delaware. Retrieved from:...
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