COMPARING TWO SYSTEMS FOR SURVEILLANCE OF NEONATAL ABSTINENCE SYNDROME IN ALASKA

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WHAT IS NEONATAL ABSTINENCE SYNDROME?

- A drug withdrawal syndrome that occurs after in utero exposure to opioids
- Long-term consequences for the infant are unknown
- Increasing nationally over the past 15 years
- Associated with national increase in prenatal opioid use
- Expensive
DATA SOURCE 1: HOSPITAL DISCHARGE DATABASE (HDD)

- AKA, the State Inpatient Database (SID/HCUP)
- Only available for 2001-2012
- Does not include individual identifiers
- Hospital reporting not mandatory until 2015

Percent of Births Represented in HDD

<table>
<thead>
<tr>
<th>Year</th>
<th>0%</th>
<th>5%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>77%</td>
<td>80%</td>
<td>82%</td>
<td>82%</td>
<td>82%</td>
<td>73%</td>
<td>68%</td>
<td>67%</td>
<td>69%</td>
<td>66%</td>
<td>66%</td>
<td>69%</td>
</tr>
</tbody>
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METHODS

- ICD-9-CM and ICD-10-CM codes for “Drug Withdrawal Syndrome in Newborn” (779.5 and P96.1)
- Excluded reports >28 days of birth
- Evaluated exclusion criteria to identify iatrogenic NAS (Patrick et al, JAMA 2012):
  - Very low birth weight (<1500 g)
  - Complex medical conditions
- Trend analysis using negative binomial regression

TREND IN NAS RATES, ALASKA (HDD) AND U.S. (HCUP), 2000-2012

**EVALUATION OF EXCLUSION CRITERIA AMONG 372 HDD CASES**

- **Very low birth weight**
  - ICD-9-CM diagnosis codes that indicate birth weights (764.0x, 764.1x, 764.2x, 764.3x, 764.4x, 764.5x)
  - Diagnosis related group (DRG) code for >37 weeks’ gestation and ≥2500g term neonate with problems (589 for 2001-2007, 793 for 2008-2012)
  - Proxy information on birth weight was available for 346 (93%)

- **Iatrogenic NAS**
  - chronic lung disease (bronchopulmonary dysplasia) (770.7)
  - intraventricular hemorrhage (772.1x)
  - periventricular leukomalacia (779.7)
  - necrotizing enterocolitis (777.5x)
  - spontaneous bowel perforation (777.6)

- 14 (4%) met at least one exclusion criteria
  - 7 VLBW, 9 medical conditions


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**DATA SOURCE 2: MEDICAID CLAIMS DATABASE**

- 78% of HDD-identified NAS cases indicated Medicaid was primary payer
- Available through current date
- 53% of births are Medicaid-eligible (range 49%-54% during 2004-2014)
- Identifying information would allow for linkage to birth certificates
  - 90% of 231 Medicaid NAS cases (2004-2015) linked to an Alaska birth certificate

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**PRENATAL CARE UTILIZATION PRELIMINARY FINDINGS**

![Chart showing prenatal care utilization]

  - No prenatal care: 41%
  - Inadequate prenatal care: 25%
- All 2014 Medicaid-eligible births: No prenatal care 25%, Inadequate prenatal care 18%
- All 2014 AK resident births: No prenatal care, Inadequate prenatal care
LESSON LEARNED: CHECK SECONDARY CODES

Number of NAS Cases by Birth Year – Alaska HDD and Medicaid, 2001-2015

HDD (all codes)  Medicaid (principal code only)  Medicaid revised (all codes)

LIMITATIONS
- Neither data source completely represents the entire Alaska birth population.
- ICD codes don’t distinguish between appropriately prescribed opioid use, abuse of prescription drugs, and use of illicit drugs.
- Potential for misclassification - data are based on billing codes rather than confirmed diagnoses.
- Some of the increase could be due to providers being more aware of the syndrome and revisions to the AAP NAS diagnostic guidelines in 2012.

CONCLUSIONS
- The burden on the health care system caring for NAS infants has clearly increased.
- For surveillance of NAS in Alaska, Medicaid is the preferred source of data
  - More timely
  - Encompasses a large percentage of at-risk population
  - Records can be linked to birth certificates
  - HDD allows for comparisons to national rates
  - Representativeness may improve with 2015 data
  - Exclusion criteria
    - Complicated to apply (on HDD) and did not change interpretation of trends
THANK YOU!

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