Introduction to Neonatal Abstinence Syndrome

Cara Christ, MD
Director, Arizona Department of Health Services
Learning Objectives

1. Define Neonatal Abstinence Syndrome

2. Describe Neonatal Abstinence Syndrome in Arizona and the United States
Did you know...

- Americans make up 5% of the world’s population and consume 80% of all opioids sold globally
- Opioid overdoses cause 46 deaths per day in the US
- Prescription pain relievers claim more lives than heroin and cocaine combined
The Silent Epidemic

• Drug poisoning deaths have surpassed motor vehicle deaths

• There was a 4 fold increase in the quantity of Prescription Pain Relievers sold in the U.S. in the last decade

• Arizona was the 12th highest state in the country for prescription drug misuse among individuals 12+ years in 2013
Women of childbearing age

• Approximately 1/3 of women of childbearing age had an opioid prescription filled each year from 2008-2013
  – 39% of women aged 15-44 on Medicaid
  – 28% of women aged 15-44 on private insurance

Pregnant women

• 21.6% filled a prescription for an opioid during pregnancy
  – 18.5% in 2000 vs 22.8% in 2007

These drugs can increase the risk of Neonatal Abstinence Syndrome

Neonatal Abstinence Syndrome (NAS)

- NIH definition: Fetal and neonatal addiction and withdrawal as a result of the mother's dependence on drugs during pregnancy
- Primarily associated with use of opiates during the prenatal period (antepartum)
  - Amphetamines, barbiturates, benzodiazepines (e.g., diazepam, clonazepam), cocaine, marijuana, opiates and/or narcotics (e.g., heroin, methadone, codeine/hydrocodone, vicodin, oxycodone)
  - Other substances including alcohol have been linked to this syndrome

NAS Withdrawal

• Withdrawal may occur from both licit (legal/prescribed) and illicit (illegal/misuse of prescription drugs) drugs.

• Babies with opioid withdrawal usually exhibit symptoms 1-3 days after birth (some as late as 5 – 10 days)
NAS Symptoms

- High-pitched cry/irritability
- Respiratory distress
- Sleep–wake disturbances
- Alterations in infant tone and movement (hyperactive primitive reflexes, hypertonicity, and tremors with resultant skin excoriations)
- Feeding difficulties
- Gastrointestinal disturbances (vomiting and loose stools)
- Autonomic dysfunction (sweating, sneezing, fever, nasal stuffiness, and yawning)
- Failure to thrive
NAS: United States

• From 2009 – 2012, NAS increased from over 3 births per 1,000 hospital births to nearly 6 babies per 1,000 hospital births

• Aggregate hospital charges for NAS increased from $732 million to $1.3 trillion
  – 81% from state Medicaid plans in 2012

NAS defined in Arizona

- ‘NAS’: The number of newborns in AZ with any underlying ICD-9-CM diagnosis code of 779.5 “drug withdrawal syndrome in a newborn.”
- ‘Other substances including alcohol’: The number of newborns in AZ with any underlying ICD-9-CM diagnosis codes: 760.71 (Alcohol), 760.72 (Narcotics), and 760.75 (Cocaine)
NAS: Arizona

Arizona Neonatal Abstinence Syndrome Rates for 2008-2013

Number of AZ Newborns with drug exposure, 2008-2013

- Narcotics:
  - 2008: 247
  - 2009: 413
  - 2010: 417
  - 2011: 431
  - 2012: 549
  - 2013: 645

- Cocaine:
  - 2008: 160
  - 2009: 100
  - 2010: 78
  - 2011: 67
  - 2012: 62
  - 2013: 53

- Fetal Alcohol Syndrome (FAS):
  - 2008: 22
  - 2009: 24
  - 2010: 15
  - 2011: 31
  - 2012: 27
  - 2013: 21
Rates of AZ Newborns with drug exposure per 1,000 live births, 2008-2013

- Narcotics
- Cocaine
- Alcohol
NAS: Arizona Counties 2008-2013

• Maricopa county had a significantly lower NAS rate (2.56 per 1000 births) compared to the state.

• Pima county had a significantly higher NAS rate (5.06 per 1000 births) compared to the state.

• Border region also had a significantly higher rate (4.06 per 1000 births) compared to non-border region (2.51 per 1000 births) and the state rate.
Figure 2. 2008-2013 Neonatal Abstinence Syndrome (NAS) Rates by Primary Care Area (PCA)

Map Date: May 2014

Rate per 1000 Hospital Births

- 0.72 - 1.84
- 1.85 - 3.21
- 3.22 - 5.61
- 5.62 - 8.82
- Count < 6

Metro Phoenix

Metro Tucson
Arizona Newborns exposed to all drugs (i.e., narcotics, cocaine and alcohol):

• Pinal county accounted for approximately 9% of cases relating to narcotic exposure and 4% of the cases relating to cocaine exposure

• Narcotic exposure was higher (5.6 per 1,000 births) in non-border regions compared to the overall state rate (5.2 per 1,000 births)

• In contrast, cocaine exposure (1.7 per 1,000 births) was higher in border regions compared to the overall state rate
Figure 4. Arizona Drug and Alcohol Exposed Newborns by Primary Care Areas (PCA) 2008-2013

PCA Rates
- 0.00 - 6.63
- 6.64 - 19.23
- 19.24 - 49.41
- 49.42 - 83.33
- Counts < 6

Map Date: May 2014

Arizona Department of Health Services
## NAS Characteristics: AZ and US

<table>
<thead>
<tr>
<th></th>
<th>Arizona NAS rates</th>
<th>US NAS rates</th>
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<tbody>
<tr>
<td>Males</td>
<td>55 %</td>
<td>55 %</td>
</tr>
<tr>
<td>Low birth weight</td>
<td>18 %</td>
<td>19 %</td>
</tr>
<tr>
<td>Medicaid</td>
<td>77 %</td>
<td>78 %</td>
</tr>
<tr>
<td>Private insurance</td>
<td>13 %</td>
<td>15 %</td>
</tr>
<tr>
<td>Respiratory Diagnosis</td>
<td><strong>17 %</strong></td>
<td>31 %</td>
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<tr>
<td>Feeding Difficulties</td>
<td>5 %</td>
<td>18%</td>
</tr>
<tr>
<td>Seizures</td>
<td>1 %</td>
<td>2.3 %</td>
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</tbody>
</table>

# NAS Characteristics: AZ NAS births compared to all other AZ births

<table>
<thead>
<tr>
<th></th>
<th>Arizona NAS rates</th>
<th>Other AZ Hospital Births</th>
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<tbody>
<tr>
<td>Males</td>
<td>55 %</td>
<td>51 %</td>
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<tr>
<td>Caucasian</td>
<td>68 %</td>
<td>47 %</td>
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<tr>
<td>Medicaid</td>
<td>77 %</td>
<td>53 %</td>
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<tr>
<td>Private insurance</td>
<td>13 %</td>
<td>37 %</td>
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<tr>
<td>Low Birth Weight</td>
<td>18 %</td>
<td>7 %</td>
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<tr>
<td>Respiratory Diagnosis</td>
<td>17 %</td>
<td>5 %</td>
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<tr>
<td>Feeding Difficulties</td>
<td>5 %</td>
<td>1 %</td>
</tr>
<tr>
<td>Seizures</td>
<td>1 %</td>
<td>.08 %</td>
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<tr>
<td>Median cost in dollars</td>
<td>$31,070</td>
<td>$2,518</td>
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<tr>
<td>Median Length of Stay</td>
<td>13 days</td>
<td>2 days</td>
</tr>
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</table>
NAS Symptoms: Arizona

NAS infants in Arizona compared to other Arizona Newborns (2008-2013)

• 3 times more likely to be low birth weight
• 4 times more likely to have respiratory symptoms
• 5 times more likely to have feeding difficulties
• 17 times more likely to have seizures
AZ Newborns exposed to all drugs (i.e., narcotics, cocaine and alcohol): Characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>AZ Newborns Exposed to All Drugs</th>
<th>Other AZ Hospital Births</th>
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<tbody>
<tr>
<td>Low Birth Weight</td>
<td>23.18%</td>
<td>7.02%</td>
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<tr>
<td>Respiratory Symptoms</td>
<td>14.42%</td>
<td>4.88%</td>
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<tr>
<td>Feeding Difficulties</td>
<td>4.04%</td>
<td>1.15%</td>
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<tr>
<td>Medicaid</td>
<td>75.52%</td>
<td>52.8%</td>
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<tr>
<td>Median Hospital Stay Cost</td>
<td>$4,932</td>
<td>$2,514</td>
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In Summary

- Newborns with NAS experience
  - Longer hospital stays
  - Increased Medical Complications
  - Increased Medical Costs (Often using state Medicaid plans)
What are we doing now?

- Arizona Opioid Prescribing Guidelines
- Controlled Substances Prescription Monitoring Program (CSPMP)
- Policies for Licensed Healthcare Facilities
- Home Visiting – Substance Abuse Screening
- 2 Free CME Credits to help AZ DEA prescribers incorporate the 2014 Arizona Opioid Prescribing Guidelines at:

  www.VHL.com/AZPrescribing
Questions?