Neonatal Abstinence Syndrome Screening for Newborn Girl with Prenatal Maternal History of Substance Use Disorder

INDIANA UNIVERSITY SCHOOL OF MEDICINE

Camila Arnaudo, MD • Megan Chiu • Amanda Essex • Lindsey d'Arnaud

IU Health, Indiana University School of Medicine; Bloomington, IN

CASE SUMMARY

A 3.48kg female neonate was born at 40-week,2-day gestation from spontaneous vaginal delivery with no meconium and Apgar scores of 8 and 9. Prenatal maternal history was significant for hepatitis C, heroin use, and buprenorphine (BUP) mono-product as medication assisted treatment (MAT) and maternal urine drug screen positive for BUP and benzodiazepines at delivery. The newborn's urine drug screen was positive only for BUP. During her 4-day hospital course, she was eating and voiding well with some need for caregiver support for consoling and no need for pharmacological intervention per Eat, Sleep, Console Method. She was discharged home with her mother and supportive extended family, and she has been developing well without major complications as of three months of life.

BACKGROUND: Definition

- Neonatal Abstinence Syndrome (NAS) is a drug withdrawal syndrome of newborns with prenatal exposure to opioids and other substances. [7-11,14]
- NAS usually occurs in the first 24 hours of life for short-acting opioid exposure or the first 72-96 hours of life for long-acting opioid exposure. [7-11,14]
- Affected infants show symptoms of CNS irritability and autonomic activation[11,14], including:
  - Tremors and restlessness
  - Hyperactive reflexes
  - Regurgitation
  - Increased tone
  - High-pitched cry
  - Frantic suck
  - Difficulty sleeping

BACKGROUND: Epidemiology, Evaluation, and Management

What are the current numbers?

- The incidence of NAS has increased 5-fold, from **1.5 to 8.0** per 1000 hospital births, between 2000 to 2014[14-15], as shown in Fig 2.
- This increase disproportionately impacts Medicaid-insured patients: Medicaid coverage of NAS-related births have increased from 73.7% to 82.0% during 2004-2014.[14-15]

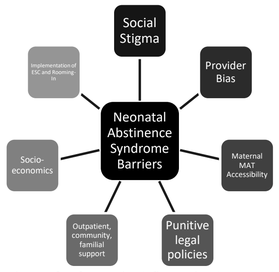

Fig. 1: A few factors that influence barriers to NAS identification and treatment[1,3,5,9, 12-13]

How is NAS assessed?

- Finnegan Scale (1975)
  - Assigns a score based on signs of withdrawal measured every 4 hours to assess need for treatment. [6-7]
- Eat Sleep Console (2017)
  - Focuses on maternal involvement and reducing need for pharmacological treatment.
  - ESC is replacing the Finnegan Scale in many health systems as it is associated with up to a 73% reduction in hospital stays and a reduction in pharmacological treatment that ranges from 47.1-84%. [2,4,6,7]

How do we treat NAS?

- Treatment of NAS depends on assessment scoring and clinical signs.
- Nonpharmacologic treatment:
  - Preferred in mild cases and utilizes swaddling, frequent feedings, and minimally stimulating environments. [9-10, 11,14]
  - Increased maternal involvement is recommended by the American Academy of Pediatrics (AAP) as this can lead to better outcomes. [9]
  - Breastfeeding is also recommended as it can lead to reduced need for pharmacological treatment and length of stay. [9]
- Pharmacologic treatment:
  - Can improve symptoms of withdrawal for more infants with more severe NAS that does not respond to nonpharmacologic treatment.[9]
  - The AAP recommends initiating either morphine or methadone for infants with opioid exposure. Phenobarbital can be added for infants with exposure to multiple substances. [9]

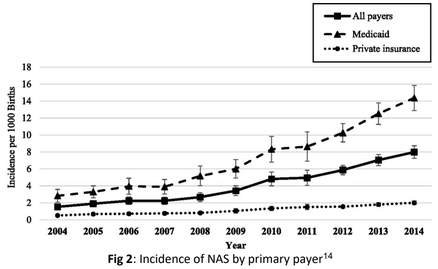

Fig 2: Incidence of NAS by primary payer[14]

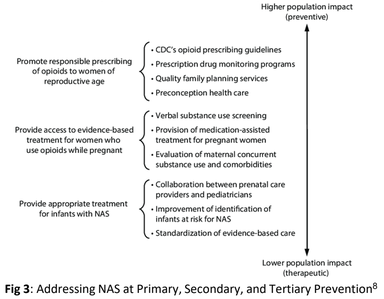

Fig 3: Addressing NAS at Primary, Secondary, and Tertiary Prevention[8]

CLINICAL SIGNIFICANCE

Standardize Care for NAS:

- Wide variability in inpatient care for infants suffering from NAS and treatment remains unstandardized across institutions, thus recommended by the AAP to standardize of hospital policies and care processes due to evidence of improved hospital care and outcomes. [11]

Improve Access to Maternal MAT[12]:

- The American College of Obstetricians and Gynecologists recommend MAT with methadone or buprenorphine for pregnant women with opioid use disorder. [3]
- Only 19 states have created or funded treatment programs specifically for pregnant women, and only 17 provide these patients priority access to state-funded drug treatment programs. [1]

Abolish Detrimental Punitive Policies:

- US states with punitive policies (e.g. criminalizing gestational drug use, pursuing charges for child abuse/neglect, or involuntary hospitalization) were associated with **significantly greater odds of NAS (1.33) after 1 year of policy enactment**, versus states with no such policies. [5]
- 23 states and the District of Columbia classify substance use during pregnancy as child abuse under civil child-welfare statutes; 3 such states consider it grounds for civil commitment. [1]

Decrease Stigma and Discrimination:

- Perceived stigma and discrimination regarding substance use and MAT discourage pregnant women from seeking prenatal care or disclosing substance use to healthcare providers. [13]

CONCLUSION

This case provides a positive example of early initiation maternal MAT and use of ESC for a newborn with concern for NAS. We hope such cases will continue to help mitigate stigma and help us advocate for non-punitive state policies regarding substance use during pregnancy.

Additionally, more research needs to be done on the barriers to care and efficacy of current management and evaluation methods, as well as long-term outcomes of NAS.

REFERENCES

For additional resources on NAS and its management, the AAP launched a campaign called #NavigatingNAS to generate discussion and increase education on NAS.

Fig 4: #NavigatingNAS Campaign Resources by American Academy of Pediatrics

To find out about different state policies, Guttmacher Institute recently updated their report on punitive vs reporting laws in each state.

Fig 5: Guttmacher Institute 2/2020 Report on State Policy for Substance Used During Pregnancy