State Reports of Neonatal Abstinence Syndrome (NAS)

According to the Association of State and Territorial Health Officials (ASTHO), there has been a significant increase in the prevalence of NAS, from 1.20 per 1,000 hospital births in 2000 to 3.39 per 1,000 U.S. hospital births in 2009. There are numerous approaches to screening for NAS, with the Modified Finnegan’s Neonatal Abstinence Scoring Tool the most frequently used NAS assessment tool in the United States.

According to the ASTHO report, nearly all opioid-exposed infants will display some NAS symptoms, but only a subset of infants will need pharmacotherapy. Opioid receptors are concentrated in the central nervous system and the gastrointestinal tract, so the predominant signs and symptoms of opioid withdrawal manifest as central nervous system irritability, autonomic overreactivity, and gastrointestinal dysfunction. NAS affects infants’ self-organization and self-regulation, interfering with basic functions such as feeding, sleeping, and the ability to be alert and communicate clear cues to caregivers. The onset of symptoms depends on the type of drug(s) used, as well as other maternal and infant factors such as metabolism, birthweight, and gestational age at birth. Heroin exposure usually results in NAS symptoms within 24 hours of birth, whereas methadone withdrawal usually manifests with 72 hours of birth and may last several days to weeks. Withdrawal symptoms following buprenorphine exposure appear to emerge later, so infants may need to be observed longer in the hospital.

The ASTHO report notes that infants at risk for NAS also have an increased risk of certain complications in the neonatal period. NAS is associated with an increased risk of respiratory complications at birth, low birthweight, prematurity, feeding difficulties, and seizures.
According to the ASTHO report, non-pharmacological management should be the standard of care for all opioid-exposed infants to help them sleep, eat, gain weight, and interact with caregivers. Non-pharmacological interventions include:

- Minimizing stimuli such as light and sound
- Avoiding infant autostimulation by careful swaddling
- Responding early to an infant’s signals
- Adopting infant positioning and comforting techniques such as:
  - Swaying
  - Rocking
  - Pacifier use
- Providing frequent small volumes of feeds to allow for adequate growth

Pharmacological management is indicated to relieve moderate to severe signs of NAS and prevent complications such as fever, weight loss, and seizures if the infant is not responding to non-pharmacological support. According to the ASTHO report, however, pharmacological therapy should be undertaken with caution because it can lengthen the hospital stay and may interfere with mother-infant bonding.

The first-line therapy for opioid withdrawal is treatment with an opiate. Morphine is an option, as is methadone. Buprenorphine is another potential new option for infant treatment, but this drug needs further study as a primary choice for NAS. Clonidine and phenobarbital are drugs that may be used as adjunct therapy to the primary opiate treatment for NAS.

For more information about neonatal abstinence syndrome and state response, please see the full ASTHO report at www.astho.org Or, please contact Dr. Karen Kuehn Howell at the Center for Maternal Substance Abuse and Child Development, Emory University School of
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