

# Neonatal Abstinence Syndrome

## Overview

Neonatal abstinence syndrome (NAS) refers to a treatable condition that newborns experience after chronic exposure to certain substances, primarily opioids, while in utero. While repeated exposure to benzodiazepines, barbiturates, and alcohol has also been linked to infant withdrawal symptoms, chronic opioid use is the most common source of NAS.<sup>1</sup> Symptoms may include difficulty feeding, irritability, high-pitched cry, problems with calming/settling, and difficulty sleeping which may last from days to weeks.<sup>1,5</sup> Newborns may, but do not always, experience NAS after chronic opioid exposure, both illicit and licit, though the associated risks with illicit opioid use are remarkably different. According to the American College of Obstetricians and Gynecologists (ACOG) and the American Society of Addiction Medicine (ASAM), in addition to NAS, untreated heroin dependence during pregnancy may increase the risk of fetal growth restriction, abruptio placentae (premature separation of the placenta from the uterus), preterm labor, and fetal death.<sup>5</sup> These risks may be associated with repeated withdrawal symptoms experienced between heroin doses.<sup>5</sup> Substance use disorders are also associated with a variety of factors that put pregnant women and their children at additional risk, including victimization, lack of prenatal care, poor nutrition, use of tobacco, incarceration, infectious disease, and others.<sup>5</sup> ACOG and ASAM agree that medication-assisted treatment (MAT) is the standard of care for pregnant women with opioid use disorders, providing stabilization and improving birth outcomes.<sup>5</sup> While MAT does not eliminate the risk of NAS, it provides the best chance for a healthy mother and newborn and the best chance for a safe recovery.

## Recent Trends

A pooled analysis of the 2009-2013 National Survey on Drug Use and Health (NSDUH) shows that 0.9% of pregnant women met criteria for dependence on opioid pain relievers, and 0.2% met criteria for heroin.<sup>2</sup> Though opioid dependence remains low among pregnant women, opioids have become more commonly cited as the primary substance of abuse for pregnant women at treatment admission. From 2002-2012, treatment admissions for pregnant women with an opioid use disorder increased by 124% in the publicly funded treatment system.<sup>17</sup> Much of this increase is due to the increase in use and misuse of opioid pain relievers, increasing from 2.5% of pregnant women admitted to treatment in 2002 to 18.4% in 2012.<sup>17</sup> In 2012, 4,044 pregnant women were admitted to treatment in a publicly funded MAT program using methadone or buprenorphine.<sup>17</sup>

The incidence of babies born with NAS in the U.S. is not uniformly tracked. In the most comprehensive study to date, Patrick et. al. estimated that 3.39 per 1,000 hospital births had an NAS diagnosis in 2009 or approximately 13,500 newborns, nearly triple the rate in 2000.<sup>16</sup> Costs associated with NAS births were estimated at \$53,400 per birth in 2009, compared with \$9,500 for other births.<sup>16</sup> Babies born with NAS stay in the hospital for an average of 16 days, accounting for much of the additional costs associated with these births.<sup>16</sup> Some of this additional cost may be due to a lack of knowledge about appropriate protocols to treat NAS.

## Treatment Options: Mothers

Health professionals, including ACOG and ASAM, recommend MAT for pregnant women with opioid use disorders.<sup>5</sup> MAT stabilizes the woman and encourages connections to prenatal care, prevents withdrawal, and reduces criminal activity.<sup>5</sup> Abrupt withdrawal of the woman from opioid medications is not recommended given the serious risks of inducing preterm labor, fetal distress, or miscarriage.<sup>5</sup> Medically supervised withdrawal is also not recommended given the high rates of relapse.<sup>5</sup> Practitioners should utilize established, appropriate protocols to manage NAS symptoms and reduce discomfort, given that NAS is an expected outcome for infants born to mothers receiving MAT. MAT with methadone has long been the standard of care for opioid dependent pregnant women, leading to decreased illicit drug use and improved fetal outcomes.<sup>5</sup> Preliminary research also supports buprenorphine as an effective option for pregnant women. Recent studies provide evidence that buprenorphine can further reduce the severity of NAS symptoms compared to methadone.<sup>10</sup> However, both medications have been shown to be safe and effective in treating opioid dependence during pregnancy.<sup>10</sup> MAT during pregnancy should be comprehensive and include psychosocial therapy, prenatal and other primary care services, and other indicated services and supports to assist the women in maintaining their recovery.

## Infants

The American Academy of Pediatrics (AAP) recommends that newborns with NAS initially receive treatment using non-pharmacologic means.<sup>1</sup> These include rooming-in, breastfeeding, gentle handling, and swaddling.<sup>1,8</sup> (Additional information on these techniques can be found in the box above.) Treating infants in dark, quiet environments is essential for non-pharmacologic treatment.<sup>9</sup> Despite this, many newborns with NAS are cared for in the often loud, busy neonatal intensive care unit (NICU) or newborn nursery. "Rooming-in" infants with their mothers offers a dark, quiet environment and may reduce the severity of symptoms and length of hospital stay.<sup>7</sup> ACOG, ASAM, and AAP also recommend that mothers breastfeed and swaddle newborns to help ease their symptoms and improve bonding.<sup>1,5</sup>

According to AAP, pharmacologic treatment is indicated to relieve more severe symptoms of NAS when non-pharmacologic measures have been unsuccessful. However, AAP cautions that unnecessary use of medications will prolong a newborn's hospital stay and may impede maternal-infant bonding.<sup>1</sup> When medications are administered, opioid medications are the most commonly used option.<sup>9</sup> Morphine or methadone is often the drug of first choice, followed by phenobarbital as a second treatment if necessary, particularly if the mother used heroin during her pregnancy.<sup>1</sup> AAP recommends that practitioners use a standard scoring method to assess symptoms and implement medications.<sup>1</sup>

## Promising Practices

The following have shown promise for reducing NAS symptoms and hospital stays. They may also reduce costs.

### Rooming-In

Several studies have shown that "rooming-in" infants born with NAS with their mothers, rather than transferring them to the neonatal intensive care unit (NICU) may reduce the severity of withdrawal symptoms and hospital length of stay.<sup>7</sup> The NICU environment may exacerbate infants' discomfort given the frequent noise, activity, and bright lights. Rooming-in also helps new mothers bond with their infants and offer more opportunities for non-pharmacologic, supportive techniques.

### Swaddling

"Swaddling" or snugly wrapping infants may also reduce their symptoms.<sup>1,5</sup> Swaying and rocking the swaddled newborns can help calm their symptoms.<sup>1</sup>

### Breastfeeding

AAP, ACOG, and ASAM recommend breastfeeding for mothers receiving MAT for an opioid use disorder.<sup>5,6</sup> Breastfeeding has been shown to reduce the severity of NAS. In particular, studies have shown that when infants are breastfed, rather than formula-fed, they tend to have lower NAS scores, require less medication, and spend fewer days in the hospital.<sup>3</sup> Breastfeeding may also delay the onset of withdrawal symptoms.<sup>3</sup> This is in addition to other well-known benefits including reduced risk of infection, obesity, and childhood leukemia; improved neurodevelopmental outcomes; improved maternal outcomes; and better mother-infant bonding.<sup>4,5</sup>

## Substance Abuse Prevention and Treatment (SAPT) Block Grant: Women's Set-Aside

Under the Substance Abuse Prevention and Treatment (SAPT) Block Grant, States are required to ensure that pregnant women who need treatment services are given preference in facilities receiving SAPT Block Grant funds. Pregnant women who are referred to the State for treatment must be placed within a program or have interim arrangements made within 48 hours. Further, States are required to allocate a dedicated amount of SAPT Block Grant funds to support pregnant and parenting women. This is called the "women's set-aside." Federal regulations define five core services that set-aside funded programs must provide directly or by referral while women are receiving treatment:

- Gender-specific treatment and other therapeutic interventions and child care services.
- Therapeutic interventions for their children.<sup>18</sup>
- Primary medical/prenatal care and child care services.
- Primary pediatric care for their children.
- Sufficient case management and transportation to ensure that women and their children have adequate access to the above services.<sup>11</sup>

## The Role of State Substance Abuse Agencies in Substance Use Disorder Prevention, Treatment, and Recovery

State Substance Abuse Agency Directors design, manage, and evaluate the publicly funded prevention, treatment, and recovery system in each State. State Directors provide leadership by promoting standards of care, evidence-based services, and continuous quality improvement innovations. State Directors also ensure that public dollars are dedicated to programs that work through the use of performance data management and reporting, contract monitoring, corrective action planning, on site-reviews, and technical assistance. In 2008, women's treatment coordinators from the States worked with NASADAD to develop "Guidance to States: Treatment Standards for Women with Substance Use Disorders" to help guide States in the oversight and provision of evidence-based treatment for women.<sup>19</sup>

## Key Federal Programs and Agencies

SAMHSA's **Substance Abuse Prevention and Treatment (SAPT) Block Grant** is a formula grant awarded to every State and Territory. SAPT Block Grant funds enabled more than 1.6 million Americans to receive treatment services during the 2014 report year. The SAPT Block Grant accounts for an estimated 68% of State Substance Abuse Agencies' expenditures on prevention.<sup>12</sup> In addition, more than 7.4 million Americans received SAPT Block Grant-funded prevention services in individual-based programs, and more than 285 million services were provided in population-based programs during the same period.<sup>13</sup> During the 2014 report year, clients who were discharged from SAPT Block Grant-funded treatment services had the following outcomes: 92.9% reported having a stable living situation; 93.9% had no arrests during the past 30 days; 81.5% were abstinent from alcohol; and 72.1% were abstinent from illicit drugs.<sup>13</sup>

SAMHSA's **Pregnant and Postpartum Women (PPW) grant program** within the Center for Substance Abuse Treatment (CSAT), funded at \$15.9 million in FY 2015, provides competitive grant funding to States to expand the availability of residential substance use disorder treatment and recovery services for pregnant and postpartum women and their children (under 18).

The **Office of National Drug Control Policy (ONDCP)** provides federal leadership on substance use disorder prevention, treatment, and recovery policy. Among its many initiatives designed to address the opioid crisis, ONDCP works with agencies across the Administration to identify ways to address neonatal abstinence syndrome and ensure timely access to treatment for pregnant women.

## References

1. American Academy of Pediatrics (AAP). (2012). Clinical report: Neonatal drug withdrawal. Committee on Drugs, and the Committee on Fetus and Newborn, *Pediatrics*, 129(2): e540-e560.
2. National Survey on Drug Use and Health. (2013). Analysis of 2013 NSDUH Public Use file accessed through the Substance Abuse Mental Health Data Archive, ran on 2015-04-28 using SDA 3.5: Tables.
3. Abdel-Latif, M. et al. (2006). Effects of breast milk on the severity and outcome of neonatal abstinence syndrome among infants of drug-dependent mothers. *Pediatrics*, 117(6): 1163-1169.
4. AAP. (2012) Section on breastfeeding. *Pediatrics*, 129(3): 827-841.
5. American College of Obstetricians and Gynecologists (ACOG), American Society of Addiction Medicine (ASAM). (2012). Committee opinion: Opioid abuse, dependence, and addiction in pregnancy. Committee on Health Care for Underserved Women and the American Society of Addiction Medicine, 524: 1-7.
6. AAP. (2012). Breastfeeding and the use of human milk. *Pediatrics*, 129(3): 600-603.
7. Saiki, T. et al. (2010). Neonatal abstinence syndrome - postnatal ward versus neonatal unit management. *European Journal of Pediatrics*, 169: 95-98.
8. Burgos, A. & Burke, B. (2009). Neonatal abstinence syndrome. *NeoReviews*, 10(5), e222-e229.
9. Sutter, M. B., Leeman, L., & Hsi, A. (2014). Neonatal opioid withdrawal syndrome. *Obstetrics and Gynecology Clinics of North America*, 41(2), 317-334.
10. Jones, H., et al. (2010). Neonatal abstinence syndrome after methadone or buprenorphine exposure. *New England Journal of Medicine*, 363(24): 2320-2331.
11. Department of Health and Human Services. (1993). Substance abuse prevention and treatment block grant; interim final rule. 45 CFR § 96.120-96.137.
12. NASADAD. (2015). *Substance Abuse Prevention and Treatment Block Grant: Prevention Set-Aside*. Available at: <http://nasadad.wpengine.com/2015/04/prevention-set-aside-fact-sheet/>.
13. SAMHSA. Report from WebBGAS using 2014 SAPT Block Grant Reports. Accessed October 2014.
14. Thigpen, J. & Melton, S. (2014). Neonatal Abstinence Syndrome: A Challenge for Medical Providers, Mothers, and Society. *The Journal of Pediatric Pharmacology and Therapeutics: JPPT*, 19(3), 144-146.
15. Newman, R., et al. (2013). Open letter to the media and policy makers regarding alarmist and inaccurate reporting on prescription opiate use by pregnant women. Available at: <http://advocatesforpregnantwomen.org/Opioid%20Open%20Letter%20-%20March%202013%20-%20FINAL.pdf>.
16. Patrick, S.W. et al. (2012). Neonatal abstinence syndrome and associated health care expenditures: United States 2000-2009. *Journal of the American Medical Association*, 307(18): 1934-1940.
17. Treatment Admissions Dataset. (2013). Concatenated, 1992-2012. Analysis ran on 2015-04-28 using SDA 3.5: Tables.
18. For more information, check out NASADAD's Therapeutic Services for Children Whose Parents Receive Substance Use Disorder Treatment at <http://nasadad.wpengine.com/2015/03/therapeutic-services-for-children-whose-parents-receive-substance-use-disorder-sud-treatment/>.
19. For more information, check out NASADAD's Guidance to States: Treatment Standards for Women with Substance Use Disorders at <http://nasadad.wpengine.com/pageviewer/?target=2010/12/Guidance-to-States-Treatment-Standards-for-Women1.pdf>.

## Reducing Stigma

Research has identified the stigma around NAS and substance use disorders in general as a significant barrier to treatment for pregnant women. Many mothers do not self-disclose their drug use during pregnancy due to stigma, complicating the treatment process.<sup>14</sup> In addition, when they do reach out for help, "they often encounter misinformation, denial, inaction, and even judgmental and punitive attitudes toward their substance use."<sup>14</sup> In some cases, policies that initiate punitive responses to pregnant women with substance use disorders may also create barriers to treatment.

In 2013, 40 leading medical experts sent a letter to several prominent news outlets describing how sensationalized terminology commonly used in the media to describe NAS is medically inaccurate and reinforces stigma.<sup>15</sup> "Drug-addicted babies," for example, is not an accurate description of babies born with NAS. These newborns may exhibit physiologic dependence, but they cannot exhibit the kind of compulsive behaviors associated with addictive disorders. This language is successful at eliciting a strong emotional response, but may also help to reinforce many of the negative attitudes that discourage women from accessing the treatment they need.



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Special thanks to Brian Denten, Rick Harwood, and Shalini Wickramatilake for their important contributions to this fact sheet.

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