

# How State Health Departments Can Use the Spectrum of Prevention to Address Neonatal Abstinence Syndrome

COMPANION REPORT





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# How State Health Departments Can Use the Spectrum of Prevention to Address Neonatal Abstinence Syndrome

## Introduction

In the United States, opioid medications continue to be over-prescribed and drug misuse has increased sharply. Of particular concern is the increase in the proportion of women using and misusing opioids during pregnancy. It is estimated that more than 20,000 children are born to opioid-dependent women in the United States every year. Opioid use during pregnancy is associated with an increased risk of poor health outcomes, including neonatal abstinence syndrome (NAS), and can cause costly prolonged hospital stays.

NAS is a collection of signs and symptoms that indicate a newborn is experiencing withdrawal due to an in-utero substance exposure. Many types of drugs or substances can result in a newborn experiencing withdrawal symptoms, but in-utero exposure to opioids is often considered the primary cause of NAS. The occurrence of NAS is not limited to newborns of illicit substance users, but could also be a result of pregnant women using prescribed medications for the treatment of pain, depression, anxiety, or other conditions.<sup>1</sup> A recent study found that in the United States from 2004 through 2013, the frequency of neonatal intensive care unit admissions for infants with NAS increased from seven cases per 1000 admissions to 27 cases per 1000 admissions.<sup>2</sup>

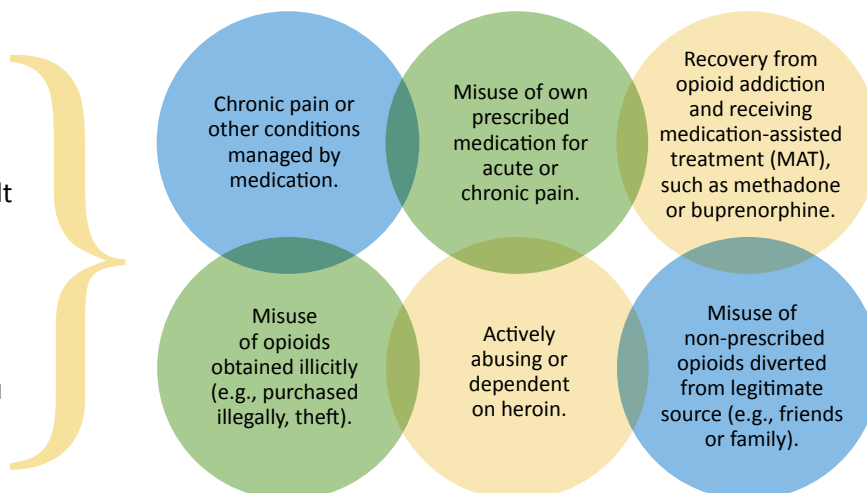
Current national dialogue is largely focused on newborn withdrawal symptoms caused by the mother’s opioid use, but it is important to recognize that nicotine, alcohol, and other prescription medications, such as benzodiazepines and anti-depressants, can also cause or exacerbate NAS. From 2012-2013, the most commonly reported maternal drug exposures included methadone (in the mothers of 31% of infants with NAS), opioid pain relievers (24%), buprenorphine (15%), antidepressants (9%), and benzodiazepines (8%).<sup>2</sup>

Beyond the symptoms of withdrawal that infants display, maternal opioid use may increase the risk of preterm birth, congenital anomalies, and impaired neurodevelopment.<sup>3</sup> Opioid use among reproductive-aged women is harmful and birth defects can develop as a result of early pregnancy exposures; in the United States, approximately half of all pregnancies are unplanned, therefore all women who might become pregnant are at risk and should assess opioid medication use.<sup>4</sup>

### Different Populations of Pregnant Women and Women of Childbearing Age Can Give Birth to Infants With NAS Symptoms

The figure to the right shows how different scenarios can result in prenatal opioid exposure and NAS.

Material adapted from Dr. Cece Spitznas, White House Office of National Drug Control Policy





Prescription opioid medications are widely prescribed among reproductive-aged women through private insurance or Medicaid, but opioid prescription claims are consistently higher among Medicaid-enrolled women. In a national study of approximately 1.1 million Medicaid-enrolled women with pregnancies during 2000-2007, 21.6 percent filled a prescription for an opioid from an outpatient pharmacy during their pregnancy.<sup>5</sup> The consistently higher frequency of opioids being prescribed to Medicaid-enrolled women is alarming and this issue is especially relevant for state-funded programs.

The proportion of pregnant women among all females admitted to substance abuse treatment programs in the United States has remained relatively stable over the past two decades. However, data from the Substance Abuse and Mental Health Services Administration's (SAMHSA) Treatment Episodes Data Set (TEDS) show that treatment admissions for pregnant women reporting prescription opioid abuse increased substantially from two percent in 1992 to 28 percent in 2012. It is critical to identify opioid dependence and polysubstance abuse during pregnancies. This allows providers to refer and engage women in opioid maintenance treatment and coordinate care with specialists in addiction medicine, behavioral health, and social services.

NAS is a treatable condition, but all newborns with a known in-utero opioid exposure are at risk for developing withdrawal symptoms. The percent of opioid exposed newborns that require pharmacological treatment varies. Reports suggest about 50-90 percent of newborns will develop symptoms severe enough to warrant pharmacological treatment.<sup>1,6,7,8,9</sup> Withdrawal symptoms can often be treated by reducing light and noise exposure and skin-to-skin contact by swaddling techniques or breastfeeding.

Given the increasing rates of opioid use during pregnancy, as well as the high cost of caring for the opioid-exposed pregnant mother and newborn dyad, states are considering ways to:

- Reduce the incidence of NAS.
- Reduce NAS severity and optimize health outcomes.
- Leverage resources and reduce costs associated with NAS.

There are many factors to consider when determining why an in-utero opioid exposure has occurred; it is important to know how to safely and effectively treat an opioid-dependent pregnant woman and her newborn and ensure long-term health outcomes for the mother and child. Therefore, when considering a statewide approach to address the NAS epidemic, it is helpful to consider collaborative efforts that address the entire prevention spectrum.<sup>10</sup>

### The Spectrum of Prevention: Neonatal Abstinence Syndrome

- **Primary prevention:** *Efforts to reduce the incidence of in-utero opioid exposure.*
- **Secondary prevention:** *Efforts to treat known in-utero opioid exposure using evidence-based interventions to reduce disease severity.*
- **Tertiary prevention:** *Efforts to promote long-term health outcomes for children with a known in-utero opioid exposure.*



NAS is a complex, growing public health issue that cuts across public and private service providers, families, schools, criminal justice systems, and other community organizations. Often, efforts aimed at addressing NAS occur within the confines of individual organizations and do not effectively address upstream causes and downstream effects.

An effective, comprehensive approach to addressing the NAS epidemic that encompasses the three stages of prevention requires partnering across state agencies, healthcare providers, and community organizations. Working collaboratively can optimize the effectiveness of state efforts by reducing fragmentation and the potential duplication of programs, while ensuring continuity of services. This report provides some case examples and a suggested framework for states to consider when planning for efforts aimed at addressing the NAS epidemic.

## Primary Prevention

### State-Based Strategies to Prevent and Reduce In-Utero Opioid Exposures

The issues surrounding in-utero opioid exposure and NAS are increasingly complex given the relationship between substance abuse and socio-demographic factors.<sup>11</sup> An important step in addressing NAS is to reduce unnecessary opioid prescriptions that can lead to social harm.

Prescribers share concerns about prescription drug abuse, safe prescribing, and maternal-fetal exposure to opioids. As part of prenatal care, obstetricians and gynecologists can check the state's prescription drug monitoring program (PDMP) and use the data to document findings related to potential abuse or harmful drug interactions. Additionally, there may need to be some consideration given to expanding state laws and rules to allow for neonatal pediatricians to observe the prescriptions issued to mothers during pregnancy because early recognition of substance exposure can improve coordination among the team providing care to the mother-infant dyad, expediting diagnosis and ensuring more rapid initiation of treatment to reduce NAS symptoms.



However, ultimately, there needs to be an understanding of the factors that lead to addiction and how this behavior is escalating prescription drug abuse and NAS. A multi-faceted approach will be the most effective for addressing NAS and should include prevention strategies that directly impact the cycle of addiction, spanning the social determinants of health, including poverty and lack of access to healthcare and education. As research suggests, these factors and the post-natal environment may have a much greater impact on birth and health outcomes than any illicit substances or prescription medications used during pregnancy.<sup>12,13,14</sup>

## Prevention of Substance-Exposed Pregnancies Collaborative (PSEP): Sonoma County, California Offers Clinician Training on LARC



In 2011, CityMatCH, a national membership organization of city and county health departments' maternal and child health programs, with funding from CDC's National Center on Birth Defects and Developmental Disabilities, launched a practice collaborative model in six urban communities. The goal of the collaborative is to help identify effective, evidence-based practices and interventions at the local public health level to prevent pregnancies exposed to alcohol and other substances. Communities from the following cities participated in CityMatCH's PSEP Collaborative:

- Baltimore, MD
- Sonoma County, CA
- Multnomah County, OR
- Denver, CO
- Montgomery County, OH
- Pinellas County, FL

While the collaborative's main strategy for preventing substance-exposed pregnancies emphasizes screening and brief intervention, teams were encouraged to move upstream to address alcohol and drug use before pregnancy and explore strategies for decreasing the number of unintended pregnancies among women who use drugs or other substances. The Sonoma County team developed a bundled screening tool (i.e., a questionnaire for determining risky use of alcohol, tobacco, and other drugs, and intimate partner violence and mental health concerns among women of reproductive age), and also took steps to help women gain access to reliable birth control to prevent unintended pregnancies. An assessment of local data showed that the use of highly effective contraceptive methods, such as long acting reversible contraception (LARC) by clients enrolled in the state Title X family planning program, was less than 10 percent.<sup>15</sup> The team targeted health-care settings and offered free trainings so that both new and experienced clinicians could practice the specialized set of skills needed for proper insertion of subdermal implants and intrauterine devices. More than 50 clinicians were trained during the project period, resulting in clinicians feeling better prepared to offer LARC and initiate conversations about family planning. The team also developed a reproductive life planning curriculum intended for use in local perinatal alcohol and drug treatment programs and is exploring the feasibility of integrating questions about contraceptive use into the intake assessment for clients entering alcohol and drug treatment programs.



## Tennessee's Voluntary Reversible Long Acting Contraceptive Jail Initiative



In Tennessee, a sub-cabinet working group, focused on NAS, was convened in 2012 that consisted of commissioner-level representation from the state's department of health, Children's Services, Mental Health and Substance Abuse Services, and Safety and Human Services, as well as the Bureau of Health Care Finance and Administration and Children's Cabinet. The group is focused on policy and program strategies to reduce NAS, with an emphasis on primary prevention. The same year, the Tennessee Department of Health (TDH) established the Primary Prevention

Initiative (PPI) as a way of encouraging health department employees to take an active role in promoting prevention activities in their own communities. The PPI was rolled out statewide the following year and, in September 2013, the East Tennessee Regional Health Office embarked on a project to educate female inmates in the jail system about NAS and using LARC as a means of reproductive health planning.

In January 2014, the project was piloted in Cocke and Sevier counties—two counties that made up 25.8 percent of the total NAS cases in the east region of Tennessee. As part of the outreach and buy in approach, a PowerPoint presentation and pamphlets were created to educate community partners (e.g., local county drug court judge, sheriffs, jail administrators, and jail nurses) about the risk of NAS associated with using opioids during pregnancy and about how to prevent unintended pregnancies through the use of LARC. County health directors, social counselors, and public health nurses volunteered to participate and lead this program within their designated jurisdictions. The program also partnered with the Family Medical Residency Program at the University of Tennessee Medical Center and provided a training opportunity for residents to insert LARC so that they might gain additional clinical skills and experience.

The health department visited the county jail and conducted educational sessions with female inmates. Following the session, women voluntarily sought referrals to the health department. The initial physical examination and LARC placement procedure took place at a clinic that was set up at the health department to provide services while the participants were still under incarceration. The jail provided transportation between the two facilities.

The Plan-Do-Check-Act method was used to guide continuous quality improvement efforts after each phase of the program's implementation, which resulted in a number of improvements and tools that were useful for other counties interested in replicating the program, including referral and tracking forms, standardized clinic documentation, and a database for collecting and reporting referrals numbers and other characteristics, like patient medical history. By October 2014, the LARC and NAS educational program had expanded to Jefferson County, and several other counties in the east region were set to receive training. In addition, through partnership with a judge in the east region recovery drug court system, family planning and NAS prevention education are now a mandatory component of sentencing for both men and women with drug-related charges.



## Developing Key Messages: The North Carolina Pregnancy and Opioid Exposure Project



In fall 2012, a multidisciplinary working group of stakeholders in North Carolina met to discuss opioid use in pregnancy and share perspectives from the field. The group included representation related to obstetrics, neonatology, pediatrics, treatment for substance use disorders, social work, care management, behavioral health, pharmacy, and others. This collaboration resulted in the North Carolina Pregnancy and Opioid Exposure Project (POEP), which was awarded funding through a federal block grant through North Carolina's Department of Mental Health, Developmental Disabilities and Substance Abuse Services, and supported by the University of North



Carolina's School of Social Work. POEP's goal is to disseminate information, resources, and technical assistance regarding all aspects of opioid exposure in pregnancy.

The workgroup developed a portfolio of key messages related to opioid use in pregnancy:

- [Infant Care Providers Working with Families of an Opioid-Exposed Newborn](#)
- [Women of Childbearing Age and Pregnant Women Who are Taking Opioids](#)
- [Providers Working with Women of Childbearing Age or Pregnant Women Who are Taking Opioids](#)

## Developing Guidelines to Encourage Safe and Appropriate Opioid Prescribing

The use of clinical guidelines can help encourage healthcare providers to incorporate several best practices when caring for patients receiving opioids to ensure effective pain relief treatment is provided in a manner that limits the inappropriate use, diversion, and potential harm from prescription drugs.<sup>16,17</sup>

Several states have published written consensus guidelines, with recommendations on caring for women of childbearing age in order to prevent and reduce the number of in-utero opioid exposures.

Provided below are examples from Arizona and Tennessee.

### Arizona Opioid Prescribing Guidelines



In November 2014, the Arizona Prescription Drug Misuse and Abuse Initiative and practitioners across Arizona published a set of consensus guidelines to promote responsible prescribing practices as a key strategy to reduce prescription drug misuse and abuse in the state.<sup>18</sup>

The Arizona Opioid Prescribing Guidelines were the result of a joint summit convened by the Arizona Department of Health Services (ADHS) that included healthcare associations, academic institutions, health plans, federal healthcare providers, public health leaders, and other stakeholders. These organizations came together to develop voluntary, consensus guidelines, adapted from existing national and state guidelines, promoting responsible prescribing practices to reduce the misuse and abuse of opioid analgesics. The guidelines specifically address the need for more specialized care when considering the use of opioids during pregnancy. "Chronic opioid therapy (COT) in pregnancy is a special situation where the discontinuation of opioids, even in a slowly tapered fashion, may not be the optimal treatment and may put the fetus at risk of multiple complications, including stillbirth...Because of these risks, providers should consider consultation with an appropriately trained pain specialist, perinatologist, or other expert for their pregnant patients on COT."<sup>19</sup>

To read the guidelines, visit the ADHS website: <http://www.azdhs.gov/clinicians/clinical-guidelines-recommendations/index.php?pg=prescribing>. These guidelines are not intended to apply to hospice or palliative care patients or patients with end of life or cancer-related pain.

### Tennessee's Chronic Pain Guidelines Include Women's Health Issues



In September 2014, the Tennessee Department of Health (TDH) published a set of consensus guidelines to define appropriate treatment of chronic pain.<sup>20</sup> The Tennessee Chronic Pain Guidelines state that the long-term goals

of appropriate pain management are to improve symptoms, function, and overall quality of life while minimizing adverse effects including addiction, overdose deaths, and NAS. The guidelines are intended to help providers reduce problems associated with prescription opioids while maintaining access to compassionate care and appropriate medications for patients living with chronic pain.

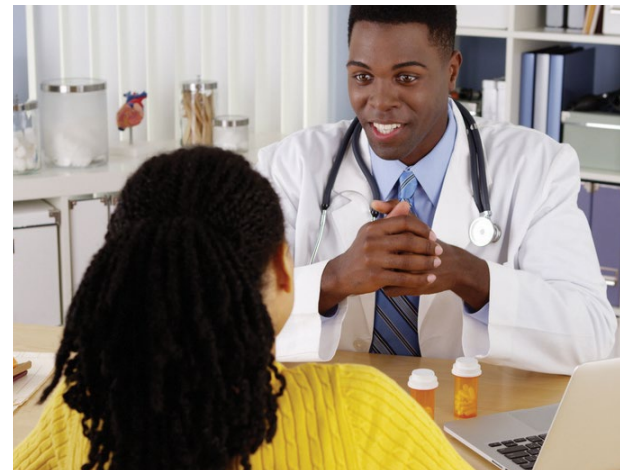
The process to formulate these guidelines included a review of national expert panel recommendations and state practice guidelines, multiple listening sessions with clinicians in Tennessee, oversight by a multidisciplinary steering committee and recommendations from an advisory committee with strong representation by clinicians with specialty training in pain medicine. Draft clinical guidelines were also circulated to a broader group of professional associations within Tennessee, including but not limited to mental health and substance abuse and workers' compensation programs.

These guidelines have specific sections on caring for women of childbearing age and pregnant women:

*"All women with reproductive capacity receiving a prescription for an opiate shall be educated about the risks of opiate use during pregnancy including the risk of physical dependence and addiction in the woman, the potential of physical dependence and withdrawal in the newborn, and possible long term consequences to the child."<sup>21</sup>*

The Tennessee Chronic Pain Guidelines have appendices that contain additional tools and guidance, including the following seven recommendations concerning the assessment and treatment of pregnant women and women of childbearing age. The guidelines recommend:

1. "Upon initiation of opioid therapy, the provider shall recommend reliable contraception, such as long-term reversible contraceptives, and make appropriate referrals.
2. Any woman with reproductive capacity, who is presently under physician care for chronic pain management or medical replacement therapy, shall be counseled on the importance of reliable contraception such as long-term reversible contraceptives. Appropriate referrals should be made.
3. The treatment plan shall include an expectation that a female patient will notify the provider if she becomes, or plans to become, pregnant.
4. The possibility of pregnancy should be assessed prior to initiation and continuation of any opioid or opioid replacement therapy. This risk should be assessed at each visit and prior to any refill for long-term therapies. A pregnancy test should be performed if there is any possibility of pregnancy. This should be documented in the medical record.
5. A woman who desires to become pregnant and is under physician treatment for chronic pain management and/or opioid replacement therapy shall be counseled on the potential risks of intra-uterine drug exposure. A referral for prenatal counseling should be made. Alternative treatment modalities should be discussed. Informed consent should be obtained prior to continuation of opioid or opioid replacement therapy.



6. Education shall include the potential risks of stopping medications on her own during pregnancy, which include relapse, preterm delivery, intrauterine withdrawal, fetal distress, and fetal demise.
7. A woman on opioid therapy who becomes pregnant or desires to become pregnant shall be referred to or consult with an obstetrician and appropriate pain management Specialist or Medical Replacement Treatment program.<sup>47</sup>

To read the guidelines, visit the TDH website: <http://health.state.tn.us/Downloads/ChronicPainGuidelines.pdf>.

## Secondary Prevention

### State-Based Strategies to Support the Effective Treatment of Known In-Utero Opioid Exposures to Reduce Disease Severity

Identifying, treating, and providing immediate post-partum care to the opioid-exposed mother and newborn dyad are critical for supporting bonding and attachment, as well as immediate and long-term health outcomes. Therefore, many of the existing efforts to address NAS have focused on secondary prevention opportunities. Researchers and healthcare providers have worked to develop tools, procedures, and guidelines in areas such as:

#### 1. Identifying and treating opioid-dependent pregnant women.

**Verbal standardized screening tools**, such as the TWEAK,<sup>22</sup> T-ACE,<sup>23</sup> and the 4 P's Plus<sup>24,25,26</sup> are effective in identifying substance misuse in pregnant women. Universal use of these screening tools early in prenatal care helps to identify women in need of substance abuse treatment and can aid in the connection and initiation of appropriate treatment and support services.<sup>27</sup>

**Medication-assisted therapy (MAT)**, in conjunction with counseling and supportive services, is a known effective practice for treating opioid dependence in pregnant women, resulting in improved health outcomes for the mother and newborn dyad.<sup>28</sup> The presence or severity of NAS withdrawal symptoms is greatly reduced for newborns of women with a substance abuse disorder if the mother receives MAT early in her prenatal care, compared to women with untreated opioid dependence.<sup>29</sup> Methadone and buprenorphine, both opioid-agonists, are the most common forms of MAT used to treat opioid-dependent pregnant women. When managed appropriately,

these medications work in the treatment of opioid-dependence by relieving cravings and withdrawal symptoms while blocking feelings of euphoria and intoxication. Methadone has been used in the care of opioid-dependent pregnant women for more than fifty years and is considered to be the standard of care.<sup>30</sup> Methadone treatment for opioid-dependence is administered in a structured, center-based setting. This highly regulated environment provides the opportunity for improved access to wrap-around services, including counseling and social services referrals.



Recent studies indicate that buprenorphine is also effective in the care of opioid dependent pregnant women and is associated with a lower incidence of NAS in newborns compared to methadone.<sup>31</sup> Unlike methadone, buprenorphine MAT can be administered in office-based settings by approved physicians.

Ensuring an opioid-dependent pregnant woman has access to MAT treatment and supportive services early in her pregnancy not only significantly reduces the likelihood of poor birth outcomes, but also greatly increases her chances of staying in recovery and setting her on the right path to a healthy pregnancy.<sup>32</sup> Moreover, studies show that the downstream costs for not treating opioid dependence, not only to the healthcare system but to other state resources such as the criminal justice and education systems, are much greater than the initial investment in effective treatment services.<sup>33</sup> Despite the many known benefits of MAT, significant barriers still exist to access these programs including program availability, costs, insurance coverage, capacity issues, and transportation.

**Communication and coordination** between MAT providers, local social services organizations, perinatal healthcare practitioners, as well as the patient, should be encouraged as a means for promoting access to coordinated treatment and services to ensure optimal continuum of care.<sup>34</sup> An essential component to increased communication involves reducing the stigma and criminalization associated with substance abuse during pregnancy and supporting women in feeling safe when accessing the treatment services they need.<sup>35</sup>

## 2. Identifying newborns at risk for NAS due to an in-utero opioid exposure.

**Communication, prior to delivery** with the patient and her team of care providers (substance abuse treatment, primary care, obstetrician, pediatrician, social services, etc.), is the best way to ensure that hospitals are aware of a known in-utero substance exposure and prepared to initiate NAS monitoring and treatment protocols.

**Toxicology screening** has been found to be an effective approach for identifying newborns with in-utero substance exposures in the absence of complete prenatal history and questionable self-report of substance use.<sup>36</sup>

## 3. Assessing the severity of NAS withdrawal symptoms.

**Scoring tools** provide a systematic and thorough evaluation of the opioid exposed newborn. Scoring systems help to better understand the natural course of NAS in a newborn and specifically identify when there is a need for pharmacologic intervention. The most common tools used in practice today are those developed by Finnegan<sup>37</sup> and Lipsitz.<sup>38</sup> To encourage the mother's participation in the care of her newborn, many states and healthcare providers recommend the mother be actively involved with the scoring process.

Despite the widespread use of standardized scoring tools for monitoring withdrawal symptoms in opioid-exposed newborns, the evidence supporting these tools is limited. The potential for bias and subjectivity affects the scores, and the thresholds for treatment reported in the literature vary. This subjectivity can be troublesome because both under-interpretation and over-interpretation of withdrawal symptoms can have significant negative consequences. Despite these limitations, NAS scoring systems have become the "gold-standard" for diagnosing NAS and determining when and





how to treat a newborn's withdrawal symptoms. In addition to adopting a standardized protocol for scoring withdrawal symptoms, it is important to be mindful of potential additional objective measures that could be used in conjunction with these scoring tools.<sup>39</sup>

#### 4. Treating mild NAS withdrawal symptoms with non-pharmacological approaches.

**Rooming-in** not only reduces costly neonatal intensive-care unit (NICU) stays, but also increases the opportunity for bonding and attachment and initiating and continuing breastfeeding. In addition, rooming-in also increases the opportunity for the parents to be involved in the scoring and care of the infant and decreases the severity of NAS withdrawal symptoms.<sup>40,41,42,43</sup>

**Breastfeeding** can help reduce withdrawal severity in newborns at-risk for NAS.<sup>44,45,46</sup> Moreover, recommendations from the American Academy of Breastfeeding Medicine,<sup>47</sup> American Academy of Pediatrics,<sup>48</sup> and American College of Obstetrics and Gynecology<sup>49</sup> encourage breastfeeding in the opioid-dependent population. Despite these guidelines and known benefits, breastfeeding rates are significantly lower among opioid-dependent mothers, compared to non-opioid dependent mothers. This high-risk population of women and children, with their compounding medical and social needs, stands to find significant benefit from the practice of breastfeeding and efforts to increase breastfeeding rates are encouraged.<sup>50</sup>

#### 5. Treating severe NAS withdrawal symptoms with pharmacological interventions.

Current American Academy of Pediatrics guidelines for the pharmacological treatment of NAS symptoms suggest the use of morphine administered in the inpatient setting.<sup>51</sup> However, in the absence of large randomized controlled trials with long-term outcome measures, considerable variability in practice exists within and between states today.<sup>52</sup> Local characteristics, expertise, and resources dictate how newborn withdrawal symptoms are treated. More research is needed to understand optimal pharmacological treatment options; it is important to be mindful of the varying characteristics of local practices and patient populations.

Current treatment improvement efforts are designed to identify interventions and protocols to effectively treat withdrawal symptoms, while reducing the length of stay in the hospital.<sup>53</sup> Long hospitalizations are costly and interfere with bonding and attachment between the mother and her newborn.<sup>54</sup>

While progress has been made in these five areas, evidence surrounding some practices remains thin, gaps exist in the availability of effective treatment programs, and there is substantial variability in the types of service available within and between states. Several states have addressed these obstacles by promoting partnerships and programs aimed at establishing consensus on evidence-based practice protocols. In addition, many of these partnerships have provided much-needed education and training opportunities for local care providers.

Maine and North Carolina, for example, are implementing secondary prevention strategies and programs along with other measures to address NAS in their states.

## Maine's "Snuggle ME" Practice Guidelines for Screening and Treatment



The Maine Chapter of the American Academy of Pediatrics, and Maine Center for Disease Control and Prevention, in partnership with obstetric, pediatric, and substance abuse specialists across Maine, came together to develop the "Snuggle ME" program.<sup>55</sup>

The "Snuggle ME" program offers resources and information for obstetrical and pediatric providers caring for pregnant women and their newborns in Maine.

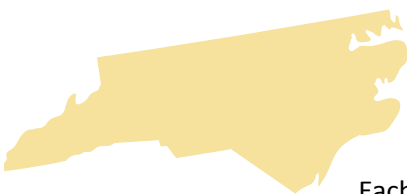
- Screening for substance use during pregnancy.
- Referrals for substance abuse treatment.
- Antepartum management of opioid-dependent women.
- Insurance and pre-authorization requirement (MaineCare).
- Intrapartum management and hospital policy guidelines.
- Sample scoring tools, communication forms and contracts.
- Patient education materials.

"Snuggle ME" partners also created an education and training webinar platform. This platform contains presentations, and supporting materials, from national and state experts on how to identify substance exposed pregnancies and newborns, as well as how to optimize care and coordination for women and children affected by substance use in pregnancy.

For more information on the "Snuggle ME" program, visit the Maine Center for Disease Control and Prevention's website: <http://www.maine.gov/dhhs/mecdc/population-health/mch/cshn/>.

To learn about the "Snuggle ME" webinar and training series, visit the Maine Quality Counts website: <http://www.mainequalitycounts.org/page/2-934/snuggle-me-webinar-series>.

## North Carolina Perinatal Quality Collaborative Focuses on Hospitals, Multidisciplinary Approaches



The Perinatal Quality Collaborative of North Carolina (PQCNC)<sup>56</sup> began working on a quality improvement project for NAS in 2014. The primary aim of the project is to support a standardized, cooperative approach to identifying, evaluating, treating and discharging opioid-exposed newborns.

Each hospital team has engaged in an intensive process of Plan, Do, Study, Act, to determine the most effective standardized practices for their respective setting.

The early, important outcomes of the PQCNC effort to standardize NAS protocols have included reducing the length of stay in the hospital for the infant and family. The collaborative currently has 19 participating hospitals.

The PQCNC has established several goals and objectives:<sup>57</sup>

- Increase the inter-rater reliability of scoring of NAS infants in hospitals.
- Increase hospital adherence to non-pharmacological treatment approaches, including:
  - Breastfeeding
  - Skin-to-skin contact
  - Cuddling
- Increase hospital adherence to pharmacological treatment approaches.
  - Recommendations on primary medication, dosing escalations, and communication.
- Increase in partnership of families in the care of their NAS infant.
  - Breastfeeding support
  - Regular parental visitation
  - Parent participation of NAS scoring

In addition, North Carolina has worked to expand Medicaid coverage to include behavioral support wraparound services, in conjunction with medication-assisted treatment for opioid dependence:

**2.1.2 Medicaid for Pregnant Women:** “Female beneficiaries of all ages with Medicaid for Pregnant Women (MPW) coverage are eligible for pregnancy-related antepartum, labor and delivery, and postpartum care as well as services for conditions that — in the judgment of their physician — may complicate pregnancy. Conditions that may complicate their pregnancy can be further defined as any condition that may be problematic or detrimental to the well-being or health of the mother or the unborn fetus such as undiagnosed syncope, excessive nausea and vomiting, anemia, and dental abscesses (This list is not all-inclusive.). The eligibility period for MPW coverage ends on the last day of the month in which the 60<sup>th</sup> postpartum day occurs” [42 CFR 447.53(b)(2)].<sup>58</sup>

For more information on North Carolina’s NAS initiative, including measurement tools and definitions, visit the PQCNC website: <http://www.pqcnc.org>.

### Leveraging Quality Improvement Networks: Vermont Oxford Network



When identifying and integrating these guidelines and practices into local care settings, consider using educational materials and quality improvement resources that already exist and can be adapted for local use, as needed. Collaborative efforts and learning experiences from others can help leverage resources, resulting in more efficient improvements of care. The Vermont Oxford Network (VON) is a nonprofit organization focused on improving the effectiveness and efficiency of medical care for newborn infants and their families through research, education, and quality-improvement projects. In 2012, VON began a comprehensive quality improvement initiative focused on NAS and has since developed several resources, including training and education materials, and demonstrated improved NAS outcomes through collaborative statewide quality improvement activities.<sup>59</sup>

In the first two years of the initiative, teams from the Vermont Oxford Network focused on systematically implementing the American Academy of Pediatrics guidelines for the care of infants and families affected by NAS. Massachusetts, Michigan, New Hampshire, and Vermont joined the VON collaborative in 2013-2014 to advance statewide efforts. The states have been successful in identifying and partnering with hospitals that provide all levels of care to provide a coordinated and synchronized network of improvement. Additionally, they have partnered with their state public health departments, and third party payers, to design effective strategies specific to their local and regional context.

VON's current NAS collaborative focuses on partnering with states and regions to support the dissemination of a standardized universal interdisciplinary NAS curriculum and training healthcare providers in an effort to deliver consistent, high quality patient care. States participating in the NAS collaborative include:

- Alaska – Alaska State Collaborative
- Massachusetts – Neonatology Quality Improvement Collaborative (NeoQIC)
- Michigan – Michigan Collaborative Quality Initiative (MICQI)
- New Hampshire/Vermont – Northern New England Perinatal Quality Improvement Network (NNEPQIN)
- Wisconsin – Wisconsin Neonatal Perinatal Quality Collaborative (WINpqc)

Visit the Vermont Oxford Network's website to view the VON 2015 NAS Training Curriculum: <https://public.vtoxford.org/quality-education/inicq-2015-nas-universal-training/>.

To learn more about Massachusetts' NAS initiative partnership with VON and the Massachusetts Department of Health, visit the Neonatal Quality Improvement Collaborative of Massachusetts website: <http://www.neogic.org/nas-project>.

## Tertiary Prevention

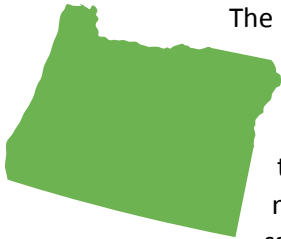
### State-Based Strategies to Promote Long-Term Health Outcomes for Children with a Known In-Utero Opioid Exposure

Tertiary prevention strategies tend to be broader in scope and range in definition to support successful maternal substance abuse treatment and safe home environments, and efforts to ensure access to appropriate preventive child healthcare services such as vaccinations and well-child visits.

Examples of states with programs that have a focus on tertiary prevention include an evidence-based home visitation and case management model in Washington state and a unique, data-driven collaboration between a Head Start program and a substance abuse treatment center in Vermont.



## Washington State's Parent Child Assistance Program (PCAP)<sup>60</sup>



The Parent Child Assistance Program (PCAP) in Washington state assigns trained case managers to work with high-risk mothers with a known substance abuse problem for up to three years following pregnancy. Through a series of home visits, the case managers connect mothers to housing, mental health services, substance abuse treatment and other services. The PCAP program works on the understanding that mothers who abuse substances can struggle with attachment, as well as establishing a safe and substance-free home, which can lead to future issues such as behavioral disorders and potential substance abuse in the child.<sup>61</sup> These issues are preventable with the right mix of supportive, prevention-oriented services.

The primary goals<sup>60</sup> of PCAP are to:

1. Assist mothers in obtaining treatment and staying in recovery.
2. Assure children are in safe, stable homes and receive appropriate healthcare.
3. Link mothers to community resources that will help them build and maintain healthy, independent family lives.
4. Prevent future drug and alcohol abuse during pregnancy.

According to the 2013 PCAP Cost Savings Brief, case managers each work with 16 families per year, currently serving approximately 735 families annually.<sup>60</sup> The cost of the program is about \$5,000 per family, not including the complete cost of the comprehensive support services accessed by these women.

To learn more about Washington's PCAP program, visit the University of Washington website:

<http://depts.washington.edu/pcapuw/>

The ultimate goal of each effort is to prevent and treat opioid-dependence in pregnancy, and the opioid-exposed newborn, to achieve long-term healthy outcomes.<sup>62</sup> To effectively evaluate the downstream impacts of prevention efforts, there will need to be a coordinated data collection and surveillance system that goes beyond the scope of the immediate effort and services provided.

### Data and Outcome Measures

The majority of current NAS incidence rates are based on hospital billing code data.<sup>63</sup> Using this type of data method for disease surveillance to define NAS rates or identify newborns that received pharmacological treatment can result in misidentification and underreporting.<sup>64</sup> Moreover, when there is a lack of substance abuse treatment and prenatal services for opioid dependent pregnant women in a geographic area there is often an underreporting of NAS incidence. This underreporting may show lower actual rates, but it is likely a reflection of NAS diagnoses being missed in the clinical record and hospital billing data. Thus, if secondary prevention efforts are successful and pregnant women are accessing treatment there will likely be an increase in NAS rates using the current definition.

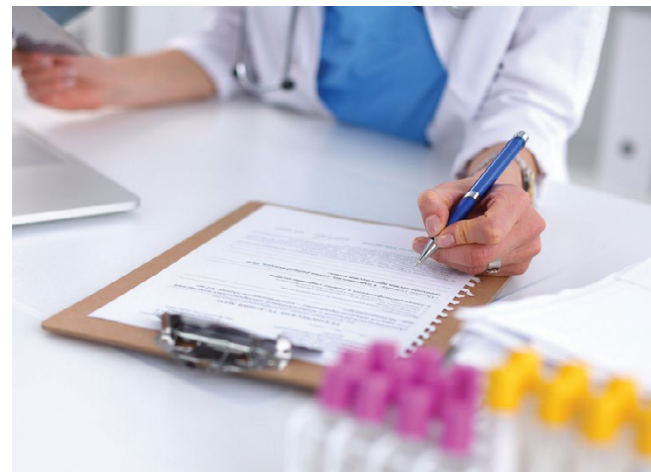
Several states have initiated efforts to improve data collection to provide a more accurate and useful estimate of the incidence of NAS.<sup>65</sup>

Kentucky’s legislature declared NAS a reportable disease and enacted a data collection requirement to get a clear picture of the extent of the problem and develop public health interventions based on the trends in the aggregate data. The legislation states that “all cases of neonatal abstinence syndrome (NAS) diagnosed among Kentucky resident births shall be reported to the Kentucky Department for Public Health by the facility where the NAS is diagnosed. The report shall be made at the time of the NAS diagnosis.”<sup>66</sup>

To learn more about Kentucky’s data reporting legislation, visit the Kentucky Cabinet for Health and Family Services website: <http://chfs.ky.gov/NR/rdonlyres/F9860ECD-D0BD-4680-91DE-B5F-4CA19B5F8/0/NASHospitalReportingGuidanceDocumentupdated11315.pdf>.

## Recommendations: Data Collection and Surveillance

When planning a data collection and surveillance strategy for in-utero opioid exposure and NAS it is important to be mindful of any unintended negative consequences. Particularly, agencies should seek a balance between patient confidentiality and identification when linking information. Many pregnant women fear being documented as opioid-dependent because of potential punitive responses, such as corrections or foster care.<sup>67</sup> These types of punitive responses not only add to the stigma associated with opioid dependence, but they discourage women from seeking effective treatment and medical care;<sup>68</sup> this only compounds the issue of underreporting of in-utero opioid exposure and NAS incidence and affects a state’s ability to truly understand the scope of the problem.



In addition to developing new data collection strategies to address in-utero opioid exposure and NAS, existing data sources can be leveraged to help drive the process. Potential data sources to explore include, but are not limited to:

- Publicly available national datasets
- Hospital discharge data
- Healthcare insurance claims, both individual provider and all-payer claims databases (APCD)
- Electronic medical records (EMR)
- Combined APCD and EMR systems
- Vital records
- Medical examiner offices
- Clinical registries
- Substance abuse treatment provider records
- Foster care data
- Corrections data and crime reports
- State education systems, educational outcomes, and pre-k programs
- Community organizations

Working together, organizations can use learnings from their data to understand the scope of the problem, and leverage resources and target interventions.

Defining process and outcome measures of interest is an important step in a data surveillance strategy for in-utero opioid exposure and NAS. Given the complexity of NAS, it is important to be mindful of potential measures that go beyond the immediate prenatal and postpartum period, and address upstream causes and downstream long-term outcomes in the context of the social determinants of health. While it is important to be mindful of in-utero opioid exposure and NAS in the “big picture,” it should not limit smaller, more targeted, important data collection efforts.

### **Vermont’s Collaborative Effort Between a Regional Head Start Program and Substance Abuse Treatment Center**

Vermont’s Northeast Kingdom Community Action Head Start (NEKCA)<sup>69</sup> program provides comprehensive, family-centered services for parents and children, offering resources and referrals in the areas of health, nutrition, community resources, and family support across three counties in Vermont. The opening of Vermont’s first MAT treatment center generated a lot of publicity and local discussion, which made NEKCA staff wonder how the MAT treatment center impacts the clients they serve. NEKCA staff met with MAT treatment center staff and reviewed data concerning patient characteristics of clientele to see if there was overlap in the types of clients the two organizations served. What they discovered was that many of the MAT center clients were pregnant women and families with children under five years old, which is the same client base as the Head Start program.

Together, as a result of these data-driven collaborative conversations, the two organizations developed a training program to better prepare NEKCA staff for identifying and supporting families in need of MAT treatment services. This awareness and partnership has connected families and individuals to appropriate social services, including many programs within the state’s Agency of Human Services, and has helped identify gaps in service areas.

To learn more about Vermont’s Northeast Kingdom Community Action Head Start, visit their website: <http://nekcavt.org/index.php/head-start>.

### **Vermont Study on Educational Outcomes of Children Born to Opioid-Dependent Mothers: A Collaborative Effort Between the University of Vermont and Vermont Agency of Education**

Like many states, the proportion of newborns born to opioid-dependent mothers in Vermont has skyrocketed over the past five years. Secondary prevention efforts have been successful, as demonstrated through the increase in access to appropriate treatment and prenatal care services, and healthy birth outcomes. However, outcomes for these children beyond birth delivery are unknown; it is hypothesized that post-delivery these children are high users of state resources and are at risk for poor educational outcomes.

In an effort to use limited state resources effectively and better understand this high-risk population, Vermont’s Agency of Education and health services researchers at the University of Vermont formed a research partnership. This partnership will use data and research methods to conduct a study to learn about the characteristics of NAS-affected children in their early years of life.



The aims of the study are to:

1. Describe educational outcomes and resource utilization of children born to opioid dependent mothers, compared to matched controls.
2. Develop longitudinal framework for continued research and evaluation.
3. Establish collaborative partnerships for targeting interventions and leveraging state resources.

The initial phase of the partnership was spent ensuring appropriate legal data sharing documents were in place and obtaining access to secure analytic platforms appropriate for such sensitive analyses. The research partnership is currently conducting a secondary data analysis as a pilot study to develop an improved understanding of educational outcomes and resource utilization of children born to opioid dependent mothers in Vermont.

Data for this analysis comes from two sources, (1) prenatal and immediate post-partum clinical records, and (2) student-level, state education records.

## Conclusion

In-utero opioid exposure and NAS are public health issues that the majority of states are facing today. Identifying effective strategies for addressing the issue is challenging due to the complexity of NAS and its association with the social determinants of health, inconsistencies in availability of known effective practices, gaps of knowledge in the evidence base, and uncoordinated and limited data collection efforts.

States are encouraged to use the information in this document to convene a group of key stakeholders including healthcare providers, substance abuse treatment providers, state agencies and departments, legislators, families, and others, to share information, coordinate efforts, and leverage resources.



## Supplemental Material

Presented below is a suggested framework for structuring key stakeholder discussions and understanding how these efforts work collectively towards the ultimate goal of healthy outcomes.

### Use data to understand the scope of the problem.

- What is the data source for current NAS incidence rates in our state?
  - What are the strengths and limitations of this data source?
- What state agencies and departments, healthcare providers, or community organizations currently collect information related to in-utero opioid exposure and NAS?
  - How are these data currently used?
  - What differences or similarities exist in data collection and interpretation efforts?
  - What opportunities exist for coordinating data collection efforts (in patient deidentified or identified manner)?
- What standardized outcome measures exist? What outcome measures are important to local efforts?
- What will improvement in rates look like?

### Consider primary prevention efforts.

- What are non-biological factors (social conditions) that influence the course of addiction in your community?
- What types of supports are in place to encourage communication and coordination between care providers and patients?
- What types of programs are in place to prevent unintended pregnancies?

### Consider secondary prevention efforts.

- Do consistent screening and care management protocols exist?
- Are there established systems of care that facilitate access to substance abuse treatment, prenatal, and newborn care?

### ***Consider current best practices for managing the opioid-dependent mother and newborn dyad during the immediate post-partum period. When promoting implementation of these practices:***

- Identify and assess educational programs and quality improvement initiatives that already exist and may be adapted for local use.
- Be mindful of the depth of evidence-based research that informs these practices, acknowledge where evidence is limited, and identify opportunities for further investigation to continue to improve these practices.

***Expand access to medication assisted treatment (MAT).***

- To what extent do these programs provide wrap-around services (behavioral, counseling, and support) for opioid-dependent pregnant women?
- How are pregnant women connected to these programs and services?

***Identification and treatment of in-utero opioid exposures.***

- Do screening, monitoring, NAS treatment, and discharge practices vary across the state?
  - If so, why?
- What quality improvement and education efforts related to caring for opioid-exposed mothers and newborn dyads exist?
  - Are these efforts coordinated locally, statewide, or between states?
- What resources are available to support education, quality improvement, and research?

**Consider tertiary prevention efforts.**

- What support services exist for new mothers with a history of substance abuse?
- What appropriate aftercare/recovery services are needed to sustain parental recovery and child safety and well-being?

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