FLORIDA
NEONATAL ABSTINENCE SYNDROME (NAS)
TOOL KIT

A QUALITY IMPROVEMENT INITIATIVE

Version 2/2019

Florida Perinatal Quality Collaborative

Partnering to Improve Health Care Quality
for Mothers and Babies

FPQC
Florida Perinatal Quality Collaborative

Florida HEALTH

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The Florida Neonatal Abstinence Syndrome (NAS) tool kit is intended to provide guidance to hospitals and neonatal providers in the development of individualized policies and protocols related to NAS. It is not to be construed as a standard of care; rather it is a collection of resources that may be adapted by local institutions in order to develop standardized protocols for NAS. The tool kit will be updated as additional resources become available.

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Contact:
Florida Perinatal Quality Collaborative
The Chiles Center
University of South Florida College of Public Health
3111 East Fletcher Avenue
Tampa, FL 33613-4660
Phone: (813) 974-5865
Fax: (813) 974-8889
E-mail: fpqc@health.usf.edu
Website: FPQC.org

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Neonatal Abstinence Syndrome Initiative Advisory Team

Neonatal Abstinence Syndrome Initiative Clinical Advisors

- Maya Balakrishnan, MD, CSSBB, NAS Clinical Lead, Associate Professor Dept. of Pediatrics & USF College of Public Health, FPQC Associate Director of Clinical & Quality Management
- Karen Fugate, MSN RNC-NIC, CPHQ, NAS Nurse Consultant, NICU Quality Specialist, Tampa General Hospital
- Erin Hough, Office of Child Welfare, Florida Department of Children and Families
- Melissa M. Bays, RN, NCH-North Naples NICU
- Lani White, RNC-NIC, BSN, Director, Specialty Programs Unit, Florida Department of Health, Office of CMS Managed Care Plan and Specialty Programs
- Denise Maguire, PhD, RN, CNL, FAAN, Associate Professor of Nursing, University of South Florida
- Kimberly B. Handley, MSW, LCSW, UF Health Shands Hospital
- Katie Powers RN IBCLC, Manatee Memorial Hospital
- Candace L. Rouse, DNP, RN-C, CNS-BC, UF Health Shands, Gainesville
- Kimberly Gould, BSN, RN, NICU Director, Plantation General Hospital
- Tricia L. Romesberg, DNP, MSN, ARNP, CNNP, Neonatal Nurse Practitioner, Nemours Children's Hospital
- Joyce A. Campbell, RN, BSN, Golisano's Children's Hospital of Southwest Florida
- Michele N. Lossius, MD, FAAP, University of Florida, College of Medicine, Department of Pediatrics
- Mark L. Hudak, MD, Professor Dept. of Pediatrics, UF Health Jacksonville, Associate Medical Director NICU Wolfson Children's Hospital
- William R. Driscoll, DO, Assistant Professor Dept. of Pediatrics, UF Health Jacksonville
- William F. Liu, MD, Medical Director, NICU Golisano Children's Hospital of Southwest Florida
- Douglas E. Hardy, MD, NICU Clinical and Quality Director, Winnie Palmer Hospital for Women & Babies
- Sara Seng, PharmD, Sarasota Memorial Hospital
- Angela Thompson, RN, BSN, Bureau of Family Health Services, Florida Department of Health
- Eliza Bruscato, MD, Obstetrics & Gynecology, Winnie Palmer Hospital for Women & Babies
- Meredith Mowitz, MD, Assistant Professor, Division of Neonatology, University of Florida
- Saima Aftab, MD, Nicklaus Children's Hospital
- Carol M. Lilly, MD, MPH, Associate Professor and Division Chief, Division of General Academic Pediatrics, University of South Florida
- Amit Mukhia, MD, Golisano's Children's Hospital of Southwest Florida
- K. Renee Konieczka, RNC, Manatee Memorial Hospital
- Paula M. Urban, ARNP, Golisano's Children's Hospital of Southwest Florida
- Diane Allen, OTR/L, NTMTC, Tampa General Hospital
- Linda Mann, DACCO, Tampa
- Aleksandra Polic, MD, Department of Obstetrics & Gynecology, University of South Florida
- Celeste Putnam, Statewide Director of Service Integration, FL Dept. of Children and Families
- Brian Kirk, MPH, MHA, Director of Maternal and Child Health, March of Dimes (Tampa)

- Jane Murphy, MPA, Executive Director, Healthy Start Coalition of Hillsborough County
- Dixie Morgese, BA, CAP, ICADC, Executive Director, Healthy Start Coalition of Flagler & Volusia Counties
- Amy Sims, MD, Obstetrics & Gynecology, Winnie Palmer Hospital for Women & Babies
- Adean Giese, RN, BSN, Golisano's Children's Hospital of Southwest Florida

FPQC Leaders and Staff

- William M. Sappenfield, MD, MPH, CPH, Professor & Director of the Chiles Center, USF College of Public Health, FPQC Director
- Linda A. Detman, Ph.D., Research Associate, USF Chiles Center, FPQC Associate Director-Operations & Programs
- Emily A. Bronson, MA, MPH, CPH, LCCE, CD(DONA), USF Chiles Center, FPQC Quality Improvement Analyst
- Estefania Rubio, MD, MPH, CPH, USF Chiles Center, FPQC Data Manager
- Nicole Pelligrino, MPH, CHES, USF Chiles Center, FPQC MCH Quality Analyst

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INTRODUCTION

This document is a working draft that reflects a review of clinical, scientific and patient safety recommendations. The information presented here should not be used as a standard of care. Rather, it is a collection of resources that may be adapted by local institutions in order to develop standardized protocols and processes for addressing NAS.

The overall goals of the Neonatal Abstinence Syndrome Initiative Tool Kit are:

1. To aid the development of standardized approaches to address variability in NAS management and decrease neonatal length of stay related to NAS in Florida
2. To guide and support care providers, outpatient care facilities, and hospitals in implementing a multidisciplinary team for NAS management.

This tool kit will provide neonatal and infant healthcare providers, staff at healthcare facilities and collaborating services with the resources to locally develop their own NAS policies and protocols with a focus on safe practices and optimizing care and outcomes.

Every US NICU facility should develop and implement a policy to address NAS that is specific to the resources and needs of the individual institution. The policy will need to address the multidisciplinary care required for these infants because the root causes of NAS are often multifactorial involving standards of care, communication, collaboration, and coordination of care. The policy should also include protocols and resources to support families' and staff's goals of safe and healthy outcomes. Ideally, there should be a reporting mechanism with debriefing and analysis to identify system(s) improvement opportunities to optimize care for NAS infants and education of their families.

Another important element is having multi-disciplinary teams in place with necessary skill sets and identified roles in assessment and timely management of NAS. Administration, nursing, obstetrics providers, neonatology, and others are all critical partners in the multidisciplinary team approach necessary for QI. These teams need to train together and practice together in order to maintain and gain new competencies. Because each hospital and care team has differing resource sets, it is important to develop individualized protocols for each facility. A QI team composed of a core set of team members from the involved disciplines must review current policies and data, determine the priorities for improvement, and develop a work plan to address their needs.

HOW TO USE THIS TOOL KIT

This tool kit is intended to provide guidance and core concepts for the QI team to include practice and administrative components. Hospitals have an obligation to patients, providers and others to assure patient safety and competent care, and likewise providers have an obligation to patients and the hospital to practice in a competent, evidence-based manner. These obligations are closely tied together and supportive of the multi-disciplinary team including the immediate neonatal care team and the extended team to include obstetric providers, nurses, primary caregiver(s), other healthcare professionals (e.g., occupational therapy, social work, behavioral health treatment providers), as well as community partners. It is everyone's responsibility to coordinate efforts to assess and treat NAS infants, engage families in their

care, develop and implement safe discharge care plans, and to report on the outcomes for future improvements. This guide offers the concepts and tools which may be adopted or adapted for local use.

The Florida NAS Tool Kit is designed as a working draft to be modified as new information and strategies are identified. All levels of hospitals who provide care to NAS infants can utilize the tool kit and modify the strategies to fit their local resources and needs. The continuum of care beyond the hospital setting is important when caring for infants and families experiencing NAS. It is important that all providers who encounter women with substance use disorders, from the prenatal period through the postpartum period, are ready to address the issue by understanding the significance of the disorder, preparing for the possibility of NAS for the infant, responding with appropriate treatment, and maintaining reporting mechanisms that allow tracking of outcomes and improvements in care.

References for each section are numbered in-text and listed at the end of the tool kit.

Disclaimer

This tool kit is considered a resource. Readers are advised to adapt the guidelines and resources based on their local facility's level of care and patient populations served and are also advised to not rely solely on the guidelines presented here. This tool kit is a working draft. As more recent evidence-based strategies become available, hospitals and providers should update their guidelines and protocols accordingly; the FPQC will also send out updates as well as revise these materials. Please note the version number in the footer.

BACKGROUND

The United States is battling an opioid epidemic, which has resulted in increasing illicit use and misuse of prescription opioids among pregnant women.[1,2] NAS, in which infants exhibit postnatal signs of withdrawal most commonly due to chronic in utero exposure to opioids, is one unfortunate sequelae of the opioid epidemic.[3] It manifests as a combination of central nervous system irritability, autonomic nervous system hyperactivity, respiratory difficulties, and gastrointestinal dysfunction.[4,5] The majority of pregnant women taking illicit drugs, using prescribed opioids, or receiving opioid replacement therapy will deliver an infant having signs of withdrawal, and many of these infants will develop NAS and require pharmacologic management.[6] NAS infants are more likely to have a diagnosis of prematurity, low birth weight, respiratory complications, seizures, and feeding difficulty. Beyond the neonatal period, they are at risk for behavioral problems, learning problems, visual disorders, and psychosocial difficulties (e.g., risk for child abuse, foster placement).[7]

Florida has experienced a 10-fold increase in NAS rates from 2002-2012.[8] In fact, it is estimated that one NAS infant is born every 25 minutes in the US.[1] The implications of these trends for not only the care of these infants, but the burden and costs for the families and the healthcare system are significant. Given the complexity of caring for NAS infants, a focus on reducing length of stay in the NICU is one approach to improving outcomes. Reducing hospital length of stay increases the opportunity to avoid medication errors and other hospital-based adverse events,[9] and optimizes the chance to enhance parent-infant attachment by limiting the stress and financial burden of a protracted hospital stay.[10]

SUMMARY OF RECOMMENDATIONS

I. Form a multi-disciplinary team to address NAS

Rationale for Recommendation I

1. Use a multidisciplinary approach to address NAS by having a team that includes opiate prescribers, primary care practitioners, pediatricians, neonatologists, obstetric providers, nurses, primary caregiver(s), community partners, and other healthcare professionals.
2. Comply with a standardized method to ensure communication regarding substance use in pregnant women occurs between obstetric and neonatal providers.
3. Meet with addiction treatment facilities and local obstetric providers to develop prenatal programs tailored to pregnant women with opioid dependency.

II. Encourage caregiver engagement

Rationale for Recommendation II

1. Provide anticipatory guidance for substance using mothers (and their families).
    A. Initiate efforts prenatally at every visit and provide continued reinforcement in the hospital setting
    B. Provide education on the following topics (at minimum): implications of opiate use in pregnancy, NAS education, hospital stay expectations for the infant, importance of primary caregiver(s) engagement in infant care, breastfeeding, interconception care, and community resources.
    C. Provide educational resources that are easy to understand and are available in the primary caregiver's most commonly spoken language.
2. Communicate effectively with primary caregivers of NAS infants.
    A. Emphasize the importance of communicating with primary caregivers using a manner that is culturally sensitive and non-judgmental. Consider a trauma-informed approach.
    B. Provide education to all healthcare providers on addiction as a chronic disease, trauma-informed care, and motivational interviewing.
    C. Encourage primary nursing for NAS infants.
3. Empower primary caregivers by transferring responsibility for nonpharmacologic interventions to them.
    A. Use a combination of handouts, brochures, participation in daily rounds, consultation, and unit tours to provide primary caregiver education.
    B. Use non-judgmental nursing staff proficient in NAS scoring to care for NAS infants and their families.
    C. Encourage primary caregivers to be at bedside as much as possible and encourage their participation in all aspects of infant care.
    D. Encourage primary caregivers to keep a diary of their infant's behaviors and responses to various activities.
    E. Refocus the nursing role to coach and support primary caregivers in the use of effective nonpharmacologic techniques.

III. Develop a hospital guideline to manage opioid use disorder (OUD) and NAS

Rationale for Recommendation III

1. Develop a hospital guideline that outlines: maternal screening; medication safety in pregnancy and labor; NAS management, breastfeeding; and safe discharge criteria.

IV. Monitor infant nutrition

Rationale for Recommendation IV

1. Promote breastfeeding and pumping expressed breast milk. Mother's own milk is recommended when it is not contraindicated.
2. Encourage infant sucking behaviors that are associated with decreased agitation and disorganization.
3. Consider on demand feeding as routine nonpharmacologic management.
4. Consider hypercaloric formula for suboptimal growth or excessive weight loss.
5. Consider alternative formulas if there is feeding intolerance.
6. Consider infant feeding techniques and need for occupational therapy or speech therapy consults to improve feeding incoordination or disorganization.

V. Screen mothers for substance use

Rationale for Recommendation V

1. Educate healthcare providers on screening approaches, as well as toxicology testing and its implications.
2. Apply a standardized and universal screening approach to identify pregnant women at high risk for substance use disorders.
3. Consider obtaining informed consent from pregnant women prior to toxicology testing.

VI. Identify infants at risk for developing NAS

Rationale for Recommendation VI

1. Educate healthcare providers on screening approaches, as well as toxicology testing and its implications.
2. Apply a selective screening approach to identify infants at risk for developing NAS.
3. Determine the most appropriate biological specimen to use for toxicology testing, and how to obtain timely results.

VII. Use an abstinence scoring system

Rationale for Recommendation VII

1. Educate healthcare providers on monitoring and reporting of abnormal findings for infants at risk for NAS.
2. Use an abstinence scoring tool with face validity and an established process to evaluate inter-observer reliability.
3. Educate and train all healthcare providers who perform NAS assessments using the chosen tool on a regular basis.
4. Combine the infant's clinical assessment, feeding ability, growth, and feedback from primary caregivers and healthcare providers with abstinence scoring for infant management decisions. Abstinence scoring should not be the sole consideration.

VIII. Optimize nonpharmacologic management

Rationale for Recommendation VIII

1. Employ nonpharmacologic management universally as standard of care for any substance exposed infant.
2. Apply environmental modifications to decrease infant stimulation and care for these infants in hospital locations where nonpharmacologic management can be optimized.
3. Promote methods to decrease infant agitation and promote sleep.
4. Promote and provide a supportive environment for rooming-in when possible.

IX. Provide pharmacologic management when necessary

Rationale for Recommendation IX

1. Ensure nonpharmacologic interventions have been effectively employed prior to starting medication.
2. Consider pharmacologic treatment to prevent complications when moderate to severe signs of NAS occur in infants who do not respond to nonpharmacologic therapies, or when the chosen NAS assessment tool has reached the threshold to begin treatment based on your institution's guideline.
3. Comply with a standardized pharmacologic guideline that includes clear instruction on the following: medication initiation; medication usage; dose escalation, weaning, and discontinuation; and duration of monitoring after medication discontinuation.
4. Consider pain treatment prior to minor procedures and/or use of prophylactic diaper creams in NAS infants.

X. Be compliant with a safe discharge care plan for every NAS infant

Rationale for Recommendation X

1. Initiate discharge planning for NAS infants upon admission.
2. Ensure exposed (or at risk) infants have been properly monitored for development of NAS before discharge.
3. Ensure pediatric follow-up within 72 hours of hospital discharge.
4. Arrange an Early Steps referral prior to hospital discharge.
5. Refer all pregnant women with substance use disorders and their infants to Healthy Start Care Coordination.
6. Provide the primary caregiver with a written list of community resources and determine the following prior to discharge: availability of safe housing; evaluation of social support; primary caregiver education on NAS, safe sleep, postpartum depression, and shaken baby syndrome; demonstration of nonpharmacologic management techniques; and, confirmation of follow-up appointment with an outpatient Pediatrician and other required consultants.

RATIONALE FOR RECOMMENDATIONS

I. Form a multi-disciplinary team to address NAS	
Recommendation	**Evidence-basis**
1. Use a multidisciplinary approach to address NAS by having a team that includes opiate prescribers, primary care practitioners, pediatricians, neonatologists, obstetric providers, nurses, primary caregivers, community partners, and other healthcare professionals (e.g., social work, behavioral health treatment providers).	Common barriers to effective care for pregnant women with opioid use disorder (OUD) and for functioning of multi-disciplinary teams include provider availability, knowledge of resources, and awareness of insurance reimbursement and coverage.[11,12]
2. Comply with a standardized method to ensure communication regarding substance use in pregnant women occurs (e.g., documentation in the medical record) between obstetric and neonatal providers. • Ideally, providers caring for women enrolled in medication-assisted treatment (MAT) will also have a standardized method for communication with obstetric providers.	It is essential that obstetric and pediatric care providers communicate to ensure early identification and safe care delivery for infants at risk for maternal substance use, as well as to improve communication with stakeholders.[13-15]
3. Meet with addiction treatment facilities and local obstetric providers to develop prenatal programs tailored to pregnant women with opioid dependency.	MAT aims to transition patients to supervised drug withdrawal using medications without euphoric symptoms, along with counseling and behavioral therapies in an effort to decrease cravings and risk of opioid overdose.[16] Beneficial MAT outcomes are reported for mothers (e.g., decrease in illicit drug use,[17-19] high risk behaviors,[7,18-20] maternal relapse,[7,17] transmission of infectious diseases like hepatitis C and HIV,[19,21] unintended pregnancies,[22] better prenatal care compliance,[18] improved maternal nutrition,[20] lower rates of fetal demise,[17] and infants born preterm/small for gestational age/low birthweight[17]).

II. Encourage caregiver engagement	
Recommendation	**Evidence-basis**
1. Provide anticipatory guidance for substance using mothers (and their families).	
A. Initiate efforts prenatally at every visit and provide continued reinforcement in the hospital setting. • Efforts can be tailored depending on maternal circumstances and timing of the interaction. • Consider providing anticipatory guidance sessions at MAT facilities.[23]	Pregnancy is a unique setting for women with substance use disorders; it can motivate them to change high-risk behaviors and engage in treatment for the infant's benefit.[24,25] Crucial in removing barriers to receiving effective care are early intervention with identification of OUD, education, and provision of resources for affected women.[14] Having multiple types of providers educate pregnant women with OUD is important and can create opportunities for successful parenting.[12] Anticipatory guidance serves to build a therapeutic relationship between the family and the healthcare team, and engages the primary caregiver in the needs and care of their infant.[26]
B. Provide education on the following topics (at minimum): implications of opiate use in pregnancy, NAS education, hospital stay expectations for the infant, importance of primary caregiver engagement in infant care, breastfeeding, interconception care, and community resources. • To address interconception care, consider starting an interview by asking a patient-focused, non-judgmental open-ended question such as, "Would you like to get pregnant in the next year?"[27]	Up to 80% of infants born to mothers receiving opiate agonist therapies will be diagnosed with NAS.[28] Early identification of OUD and early initiation of monitored counseling and education programs improve prenatal outcomes.[29] Healthcare providers can educate pregnant women with OUD in a number of important areas related to pregnancy, intrapartum care, and postpartum care.[7,12,30] Early maternal education should include discussion of opioid use, treatment goals, and anticipatory guidance regarding NAS.[14] While preconception counseling is ideal,[14] it is difficult to achieve considering approximately 50% of pregnancies in the U.S. are unintended.[22] Psychosocial interventions, including peer support, play an important role in the care of pregnant women with OUD and these resources should be emphasized to improve maternal and neonatal outcomes.[28] Psychosocial support groups can improve patient compliance and outcomes by paying attention to potential psychological comorbidities and providing indicated care.

C. Provide educational resources that are easy to understand (i.e., appropriate for the patient's level of healthcare literacy) and are available in the primary caregiver's most commonly spoken language. • These can be offered by obstetricians, MAT facilities, pediatricians, and hospitals (intrapartum, postpartum, pediatric, and neonatal areas).[23] • The AHRQ's Patient Education Materials Assessment Tool (PEMAT) helps assess understandability of printed and audiovisual materials.	Health literacy is the ability to obtain, process, and understand medical information.[31] Healthcare providers are responsible for ensuring information presented takes into consideration the patient's health literacy in order to assess and appropriately respond to a patient's perceived understanding of information discussed.[32]
2. Communicate effectively with primary caregivers of NAS infants.	
A. Emphasize the importance of communicating with primary caregivers using a manner that is culturally sensitive and non-judgmental. Consider a trauma-informed approach. • This communication may take place during preconception counseling, early maternal education, routine prenatal care, interconception care, and in the hospital. • Encourage providers to be supportive, understanding, and accepting of primary caregivers.	Substance-abusing women often engage in drug use and sexual activity that increases the risk for HIV, Hepatitis B and C, and sexually transmitted infections. Many have experienced trauma (e.g., past or present violence or abuse which can be interpersonal, physical, sexual, or emotional in nature) or have a behavioral or mental health diagnosis (e.g., anxiety, depression).[33-35] A core concept of family-centered care is information sharing. According to the Institute for Patient-and-Family Centered Care, healthcare practitioners should communicate and share complete and unbiased information with patients and families in ways that are affirming and useful. Information should be timely, complete, and accurate so families can effectively participate in care and decision-making.[36] The primary caregiver-provider relationship can be negatively impacted when families feel judged for their substance use.[37,38] One determinant of a mother's early mothering experiences is her relationship with her infant's healthcare provider, making it important to cultivate a positive relationship.[39] One study shows that even a 40-second positive interaction between a healthcare provider and patient where compassion and empathy are expressed can reduce patient anxiety and litigation risk.[40]

B. Provide education to all healthcare providers on addiction as a chronic disease, trauma-informed care, and motivational interviewing.	Applying the principles of trauma-informed care has been suggested to help create the supportive environment that is necessary to establish good relationships. This approach adapts human services, programs, and interventions to accommodate a trauma survivor's vulnerabilities or triggers. It means being more supportive and avoiding re-traumatization during communications. Specific characteristics of this approach include: recognizing the survivors' need to be respected, informed, connected, and hopeful about their recovery; understanding the interrelation between trauma and substance abuse; and the need to work collaboratively with the survivor, family, friends, and human service agencies in an empowering manner.[41,42] Staff educational programs aimed at improving interviewing skills and increasing knowledge of the disease of addiction have been shown to improve relationships with NAS families and enhance mother-infant interactions.[43-45]
C. Encourage primary nursing for NAS infants *(expert consensus opinion)*.	Primary nursing may increase reliability of abstinence scoring and improve the primary caregiver-healthcare team relationship. Some units develop a cohort of nurses who are preferentially assigned to care for NAS infants. These nurses often understand the psychology of addiction and enjoy caring for these parent-infant dyads. With time and experience, their assessment skills become more honed and they are able to establish high levels of inter-observer reliability in withdrawal assessments.[46]
3. Empower primary caregivers by transferring responsibility for nonpharmacologic interventions to them.	
A. Use a combination of handouts, brochures, participation in daily rounds, consultation, and unit tours to provide primary caregiver education on the following: • General infant care • NAS • Hospital stay expectations • Importance of nonpharmacologic interventions (skin-to-skin care,	Although strong evidence is lacking that NAS education increases primary caregiver engagement, information sharing should be part and parcel of our day-to-day interactions with families. QI publications reporting on NAS management that include NAS education, report that primary caregivers crave knowledge and wish they had more information on NAS.[23] One qualitative study found families desired improved prenatal and postnatal NAS education, particularly related to the expected NAS course,

providing a low stimulation environment, rooming-in) • Importance of breastfeeding. • Post-discharge resources • Role of the primary caregiver in NAS management	scoring process, and treatment options (nonpharmacologic and pharmacologic). Families stressed that an informational pamphlet was insufficient.[37,47] Evidenced-based methods of providing nonpharmacologic management that primary caregivers should be educated on include: skin-to-skin care (Level III); quiet, low light rooms (Level III); swaddling (Level III); rooming-in (Level II); and breastfeeding (Level I). Grading for evidence-basis is from the Canadian Task Force on Preventive Health Guidelines, with Level I being the highest.[48]
B. Use non-judgmental nursing staff proficient in NAS scoring to care for NAS infants and their families.	It has long been established that NICU nurses tend to hold negative attitudes toward pregnant women who use illicit substances, are judgmental, and lack knowledge about substance abuse and its treatment. This can be a barrier in promoting effective parent-child interactions.[37,38,49]
C. Encourage primary caregivers to be at bedside as much as possible and encourage their participation in all aspects of infant care. • If resources allow, consider providing primary caregivers sleeping accommodations, comfortable chairs at the infant's bedside, and nourishment.	Substance using mothers often have attachment and abandonment issues.[50] Maternal-infant separation among non-NAS infants is reported to affect maternal attachment and rates of infant abandonment.[51] Healthcare providers must care for the maternal-infant dyad as one entity. "Put simply, the interests of the fetus and newborn cannot be rationally separated from those of the mother."[52] As K. Verma aptly said, "…mothers should be viewed as the first-line treatment for these infants…"[53] Primary caregivers do report increased satisfaction with rooming-in over more standard arrangements.[54]
D. Encourage primary caregivers to keep a diary of their infant's behaviors and responses to various activities.	Including primary caregivers in the care of their hospitalized infant is a tenant of family centered care. In this model, primary caregivers are valued as partners and respected for their important and unique contributions.[55] One example of constructive primary caregiver engagement is to incorporate primary caregiver symptom recording into a diary as part of the infant's NAS management.[23,47]

E. Refocus the nursing role to coach and support primary caregivers in the use of effective nonpharmacologic techniques.	When clinicians engage and empower the primary caregivers, they nourish a collaborative relationship based on mutual rapport and trust.[56-58] In their approach, Grossman et al operationalized family centered care by including an "empowering message" to primary caregivers of NAS infants by emphasizing that primary caregivers play a powerful role by being present as much as possible. They stressed that comfort measures are first-line and the most important treatment that can be provided. Additionally, that a family member best administers it. During the infant's hospital stay, nurses and physicians focused on supporting and coaching primary caregivers who logged infant responses to eating, sleeping, and comforting in a diary. This, coupled with drastically reduced use of pharmacologic interventions and a simplified infant assessment, resulted in significant decreases in morphine use and increases in breastfeeding rates.[47]

III. Develop a hospital guideline to manage OUD and NAS	
Recommendation	**Evidence-basis**
1. Develop a hospital guideline outlining the following: • Maternal screening • Medication safety in pregnancy and labor • NAS management, including: screening and testing standards for high-risk infants; inpatient monitoring including location and type; criteria for transfer to a higher level of care; NAS treatment (nonpharmacologic and pharmacologic); NAS definition; and NAS-related ICD-10 codes • Breastfeeding • Safe discharge criteria Ensure the guideline clearly outlines criteria that avoid discrimination, lessen disparities, and comply with local laws.[34,59,60]	"Every labor and delivery unit should have a standardized protocol to assess and treat infants at risk and/or showing signs and symptoms of withdrawal from opioids, alcohol, and other substances."[60] Discriminatory selective screening practices (Supreme Court Ruling on Ferguson vs. City of Charleston, South Carolina) have been reported and deemed unconstitutional.[34,59]

IV. Monitor infant nutrition	
Recommendation	**Evidence-basis**
1. Promote breastfeeding and pumping expressed breast milk. Mother's own milk is recommended when it is not contraindicated. • Obtain a detailed maternal drug history prior to initiating breastfeeding.[13] • Educate mothers on hazards of continued illicit drug use while breastfeeding.[61] • Ensure necessary breast pumps and supplies are available and readily accessible. • Hepatitis C positive mothers with cracked or bleeding nipples should pump and discard breast milk until nipples have healed.[61] • There is no evidence to support the use of donor human milk over formula in this population.	The benefits of breastfeeding include improved mother-infant dyad bonding, less severe signs of withdrawal, and decreased pharmacological treatment.[62,63] Some studies report no difference in NAS severity between breastfed infants and those fed expressed breast milk,[64] and others suggest nonpharmacologic aspects of breastfeeding lessen NAS severity (i.e., bonding, skin-to-skin care). MAT is not a contraindication to breastfeeding, as amounts of opiates in breast milk are small and have low bioavailability.[48] Despite the benefits of breastfeeding in this population, breastfeeding initiation rates are less than the general population[65] and those that do elect to breastfeed stop breastfeeding in the first week of life.[66] Staff bias can confound breastfeeding rates; many healthcare workers perceive breastfeeding as harmful for neonates with NAS.[65] Staff must be aware of biases toward breastfeeding and ensure a neutral environment that is supportive of breastfeeding.[67] Breastfeeding is recommended by the Academy of Breastfeeding Medicine for NAS infants if the mother's drug history is known and certain criteria are met.[13] Their suggested criteria include the mother's participation in a substance abuse program, maintaining sobriety during the prenatal period, no illicit drug use in the 90 days prior to delivery, and intent to continue their treatment program into the postpartum period.[68] Additional contraindications are positive maternal HIV status, and cracked or bleeding nipples when maternal hepatitis C is positive.[61]
2. Encourage infant sucking behaviors that are associated with decreased agitation and disorganization (e.g., breastfeeding, pacifier use). • Take care not to overfeed NAS infants, as they are at risk for emesis and gastro-esophageal reflux symptoms.	Breastfeeding NAS infants are reported to have decreased symptom severity, reduced need for pharmacologic treatment, decreased treatment duration, and reduced length of hospital stay.[64,69,70] Pacifier use can calm infants and improve their state organization, especially during minor procedures.[48,71] NAS infants can have excessive and disorganized non-

	nutritive sucking behaviors which can be mistaken for hunger.[72]
3. Consider on-demand feeding as routine nonpharmacologic management.	Raffaeli et al recommend small, frequent feedings to address hunger, calorie needs, and assure weight progression.[73]
4. Consider hypercaloric formula (e.g., 22 kcal/oz.) for suboptimal growth or excessive weight loss (e.g., >10% from birth weight). • Encourage primary caregivers to maintain their ordered feeding regimen (i.e., calories, type) until their outpatient pediatrician evaluates the infant.	NAS infants may need higher calorie feedings to address increased energy expenditures related to increased tone, GI disturbances, or poor weight gain.[71,74] Raffaeli et al recommend 150-250 kcal/kg/day to meet the caloric demands and assure weight progression.[73] Monitoring infants while they are experiencing withdrawal includes assessment of nutritional needs, weight loss, and growth parameters.[62]
5. Consider alternative formulas (e.g., low-lactose, soy) if there is feeding intolerance *(expert consensus opinion)*.	There are currently no known evidenced-based research findings demonstrating that specific formulas are more advantageous for the NAS infant.
6. Consider infant feeding techniques and need for occupational therapy or speech therapy consultation to improve feeding incoordination or disorganization *(expert consensus opinion)*.	NAS infants may need smaller, more frequent feeds to deal with hunger demands, reflux, vomiting, or diarrhea.[71]

V. Screen mothers for substance use	
Recommendation	**Evidence-basis**
1. Educate healthcare providers on screening approaches, as well as toxicology testing and its implications.	The ultimate goal of any public health screening program is to identify individuals for whom it is expected that an intervention may improve their outcome. The objectives of screening pregnant women for substance use are to identify needed community and social supports, refer them to MAT, and identify infants at risk for developing NAS.[33] An effective screening program requires that providers comply by consistently using the tool, and patients comply by being willing to participate in the screening program. Healthcare providers should be well versed in the informed consent process, screening approach used by their institution (including sensitivity and specificity of tests), confirmatory

	testing and its medico-legal implications, and the short- and long-term consequences of NAS.[7,12]
2. Apply a standardized and universal screening approach to identify pregnant women at high risk for substance use disorders. • Consider using a substance abuse screening tool during the first prenatal visit, and each subsequent visit when substance use is suspected. • Specific questions related to substance use (past, present, prescribed, licit, and illicit) should be asked. • A pregnant woman with positive screening or confirmatory testing should be directed to appropriate community and social resources, be referred to MAT, and receive education.	Drug use among pregnant women is under-reported, particularly if self-report or risk-based screening methods are relied upon.[12,75,76] Use of a standardized and universal screening approach more effectively identifies pregnant women at high risk for substance use disorders,[77,78] and has resulted in higher rates of infant screening and positive testing results.[79] A universal screening approach is more effective than a selective or a universal testing approach. Universal screening has less social (e.g., punitive legislation) and ethical (e.g., discrimination, implicit bias) concerns than other approaches.[7,80] While universal substance use screening may be resource intense, it is less costly than universal testing and is less of a deterrent for these women to receive routine prenatal care.[12,81] Confirmatory testing of urine, blood, saliva, or hair samples may be done for positive maternal screens.[42] There is lack of consensus on the best tool to use and optimal timing of the screen, though several tools have been validated in pregnant women.[82,83] Screening programs should have an identified target population, clear eligibility criteria, clearly stated outcomes, identified type and frequency of testing, outlined risks and benefits, and consideration of cost-effectiveness.[84] ACOG states that universal screening using a validated tool, providing brief interventions, and making appropriate referrals for pregnant women with substance use is a legal obligation.[78] Having healthcare providers routinely ask all pregnant women about substance use (prescription and illicit),[78,85] particularly about their use of alcohol and other substances is endorsed by the AAFP,[86] ACOG,[78] and AAP.[87] This should be done as early as possible in pregnancy and at every follow-up visit[7,33,78] with interview-based or self-administered questionnaires (e.g., 4 P's Plus, Integrated 5 P's, CRAFFT, or SURP-P instruments).[42,88]

3. Consider obtaining informed consent from pregnant women prior to toxicology testing. The consent should specify that the woman understands: • Why screening is being done, including its risks and benefits • Consequences of positive screening and confirmatory testing, including reporting requirements to child protective services, sharing information with her and her infant's healthcare providers, and legal implications • Her provider's recommendations	Pregnant women are a vulnerable population who should understand the social and medico-legal consequences of positive screening or positive confirmatory testing (e.g., maternal arrest, prosecution for assault, termination of parental rights), entering MAT, and having an infant diagnosed with NAS.[42,89] ACOG states that explicit consent for urine drug testing should be obtained, and that women have the right to refuse testing.[89] The Child Abuse Prevention and Treatment Act (CAPTA) requires states to determine "policies and procedures to address the needs of infants born with and identified as being affected by illegal substance abuse or signs of withdrawal from prenatal drug exposure."[90] Healthcare providers have an obligation to understand their state's CAPTA interpretation and make every attempt to obtain informed consent from pregnant women prior to toxicology testing. Informed consent has important elements that may be relevant to pregnant women undergoing screening for substance use disorder. The woman must be competent to understand why screening is being done and consequences of positive screening, which includes a confirmatory toxicology test. She must understand that information regarding her screening and any confirmatory testing may be shared with healthcare providers, including those ultimately caring for her infant. The provider should recommend a plan and ensure the woman comprehends the risks and benefits of screening. The pregnant woman must be able to voluntarily decide if she will undergo screening and authorize the plan.[40,91,92]

VI. Identify infants at risk for developing NAS	
Recommendation	**Evidence-basis**
1. Educate healthcare providers on screening approaches, as well as toxicology testing and its implications. • Inform mother that toxicology testing is being performed on her infant, and its rationale *(expert consensus opinion)*.	While confirmatory toxicology testing on infants does not require informed consent, we recommend that healthcare providers notify primary caregivers that the testing is being done to improve care for the infant who is at risk for developing NAS.

2. Apply a selective screening approach to identify infants at risk for developing NAS. • Incorporate a risk-based screening assessment to identify substance-exposed infants. • Consider differential diagnoses for clinical signs of withdrawal (e.g., infection, electrolyte imbalance, hypoxic-ischemic encephalopathy)[39]	The goal of using a standardized selective testing approach (i.e., risk-based screening) is to identify infants at risk for developing short- and long-term consequences of NAS. A selective approach is preferred over universal testing as it is cost-effective.[76] Substance-exposure in an infant can be diagnosed based on a combination of maternal interview, clinical signs of NAS, and a confirmatory test.[93] • Maternal risk factors identified by screening that prompt confirmatory testing may include: previous or current substance use; participation in a MAT program; non-compliance with prenatal care; engagement in high-risk behaviors (e.g., prostitution); identification by medical providers (primary or obstetric), child protective services (e.g., children removed from the home due to child abuse), or community agencies (e.g., domestic violence); or presence of placental abruption.[76,79] • Infant risk factors identified by screening that prompt confirmatory testing may include: jitteriness despite normal glucose levels; marked irritability; unexplained seizures or apnea; increased muscle tone; unexplained intra-uterine growth restriction; positive maternal toxicology screen; or placental abruption.[94]
3. Determine the most appropriate biological specimen to use for toxicology testing, and how to obtain timely results. • Once a positive test is confirmed or there is a high index of suspicion with test(s) pending, the infant should be monitored for signs of NAS per hospital policy.	Confirmatory testing can be done using urine, meconium, or umbilical cord tissue. Confirm that suspected substances are included in the toxicology panel of the selected biological specimen, and that there is understanding of the drug detection times for different specimen types.[76,95] It is also important that testing have a short turn-around time so that results can be used to inform neonatal care.[95]

VII. Use an abstinence scoring system	
Recommendation	**Evidence-basis**
1. Educate healthcare providers on monitoring and reporting of abnormal findings for infants at risk for NAS *(expert consensus opinion)*.	Healthcare providers should be knowledgeable about their hospital's policy related to NAS management, toxicology testing with its medico-legal implications, and the short- and long-term consequences of NAS.

	Healthcare providers should also have standardized interpretation of scoring. This will allow providers to have informed discussions with mothers, set realistic expectations, and provide counseling related to NAS outcomes.
2. Use an abstinence scoring tool with face validity and an established process to evaluate inter-observer reliability.	Using abstinence scoring tools can help determine severity of NAS, as well as medication initiation, maintenance, and weaning.[96] An ideal screening tool may include the following characteristics: well-defined timing for application of the tool on the patient (e.g., timing for assessments; initiation and discontinuation of the tool; instruction on medication-adjustments), clear item definitions, ease of use for bedside providers, and strong inter-observer reliability and validity.[97] While there is no consensus on a validated tool for NAS, the Modified Finnegan Neonatal Abstinence Scoring Tool is the most commonly used tool in the U.S.[98-100] More recently introduced tools from Dartmouth[23] and Yale (Eat, Sleep, Console Care Approach)[47] have not yet been validated. Having a scoring system helps to standardize evaluation, gives consistent measurement of symptoms, and facilitates communication between care providers.[60] Although there is no agreement on thresholds to start treatment or intervals between assessments, efforts to standardize scoring can reduce treatment duration and length of stay.[4,60,98,99,101,102]
3. Educate and train all healthcare providers who perform NAS assessments using the chosen tool on a regular basis.	Information from the NAS scoring tool is often used to make medication dosage adjustments and infant disposition decisions. It is crucial that the chosen NAS tool be validated with good inter-observer reliability. Inter-observer reliability is defined as "the degree to which two independent raters or observers watch the same event at the same time, document what they observe independently, and after completing the independent ratings, compare each other's ratings for the attribute or event being observed and look for items of agreement or disagreement."[103]

	Healthcare providers administering the NAS tool should receive education and have competency with the tool assessed regularly.[103] Studies show that compliance with a validated scoring tool to identify the presence and severity of NAS can improve outcomes.[4,101] Karen D'Apolito designed an educational program to improve consistency and reliability of Modified Finnegan scoring among nurses. It includes understanding item definitions and scoring standardized clinical scenarios until there is ≥90% reliability between observers.[104]
4. Combine the infant's clinical assessment, feeding ability, growth, and feedback from primary caregivers and healthcare providers with abstinence scoring for infant management decisions. Abstinence scoring should not be the sole consideration.	While a number of scoring tools for identification for NAS exist, all have the disadvantage of including subjective components.[105] Reported nursing concerns with these tools include: poor sustainment of inter-observer reliability, particularly without repeated training; time-consuming, lengthy assessments; and having a frequent need for infant assessments.[106] In addition, there are limitations for using these tools in preterm infants, beyond the neonatal period, and in cases of iatrogenic or non-opioid NAS.[39,97]

VIII. Optimize nonpharmacologic management	
Recommendation	**Evidence-basis**
1. Employ nonpharmacologic management universally as standard of care for any substance exposed infant. • Examples of effective nonpharmacologic techniques may include OT consultation, vertical rocking, or infant massage *(expert consensus opinion)*.	The effect of standardizing nonpharmacologic management is less certain than with pharmacologic management. The suggested techniques can be tailored based on NAS signs and should be universally employed for at-risk infants.[47,48]
2. Apply environmental modifications to decrease infant stimulation (e.g., dim lights, decreased noise) and care for NAS infants in hospital locations where nonpharmacologic management can be optimized.	The specific location of care for a NAS infant is less important than whether the parent-infant dyad needs can be met while providing optimal nonpharmacologic management. In 2013, it was reported that 4% of NICU beds were dedicated to NAS infants,[3] despite the absence of evidence that NICU level of care is needed.[100] In fact, lower levels of neonatal care (i.e., postnatal ward or nursery) have been associated with decreased need for medication, treatment duration, hospital stay, and cost of care.[23,107,108] Location of care

	becomes particularly important as it is increasingly difficult to earmark NICU beds for these infants.
3. Promote methods to decrease infant agitation and promote sleep. • Encourage skin-to-skin care. • Use volunteers to provide support to infants when primary caregivers are not present. • Use an appropriate swaddling technique. • Attempt to cluster infant care, avoid unnecessary stimulation and avoidable interventions *(expert consensus opinion)*. Clustering care around times when the infant is already awake for general infant care, NAS assessments, and procedures may allow the infant to sleep undisturbed.	Skin-to skin contact is reported to decrease restlessness and pain, as well as improve physiologic stability, parent-infant bonding and maternal stress levels.[48,109,110] When primary caregivers cannot be present, volunteers can play an invaluable role in calming, comforting, feeding, and gently rocking the infant.[23,47,74,108] Appropriate swaddling reportedly results in longer duration of infant sleep, improved self-regulation, better pain tolerance, and less distress, though this has not been validated in NAS infants.[111] Correct swaddling techniques are important to prevent risk of hip dysplasia.[112]
4. Promote and provide a supportive environment for rooming-in when possible. • This may improve breastfeeding, skin-to-skin contact, primary caregiver engagement, educational opportunities, and facilitate communication.	Rooming-in efforts aim to keep the mother-infant dyad together at all times, barring any medical or safety concerns.[47] Benefits of rooming-in include increased breastfeeding rates, reduced need for medications, shorter length of hospital stay, improved retention rate of custody, more effective hospital resource utilization, and lower cost of care.[13,23,47,51,70,74,108,113] The postulated mechanism for this includes increased opportunities for breastfeeding, skin-to-skin care, or bonding. Risks of rooming-in include accidental suffocation, infant falls, and hospital readmissions for undertreated NAS or failure to thrive.[113] Barriers to rooming-in include maternal stigma or guilt, maternal medical needs (e.g., illness, medical appointments, MAT treatments, group meetings), transportation difficulties, work obligations, other children in the home, legal constraints (i.e., involvement of child protective services, incarceration), hospital culture, or hospital resource allocation.[13,23,37]

IX. Provide pharmacologic management when necessary	
Recommendation	**Evidence-basis**
1. Ensure nonpharmacologic interventions have been effectively employed prior to starting medication.	Signs of withdrawal are on a spectrum, with some infants being well-controlled with nonpharmacologic management and others requiring pharmacologic treatment.[18] Opiate exposure in infants is more likely to require pharmacologic treatment than exposure to other substances that cause withdrawal in infants.[6]
2. Consider pharmacologic treatment to prevent complications when moderate to severe signs of NAS occur in infants who do not respond to nonpharmacologic therapies,[60] or when the chosen NAS assessment tool has reached the threshold to begin treatment based on your institution's guideline.	Pharmacologic treatment aims to allow for infants to have "adequate weight gain and integrate into the social environment"[60] by decreasing NAS severity.[80] Treatment should begin when severe NAS signs are present.[15]
3. Comply with a standardized pharmacologic guideline that includes clear instruction on the following: medication initiation (drug, fixed weight-based vs. non-weight-based dosing); medication usage (1st and 2nd line); dose escalation, medication weaning, and medication discontinuation; and duration of monitoring after medication discontinuation. • It is important to achieve consensus among providers regarding the philosophical approach to NAS in their unit or hospital.	Compliance with a standardized pharmacologic protocol can decrease inter-provider variability in medication adjustments, treatment duration, and length of stay.[114] In fact, having a standardized protocol (including an agreed-upon starting dose, explicit instructions about dose escalation, strict weaning parameters) and providing NAS education to staff are highly effective interventions to decrease length of stay.[15,114] There are two distinct phases of medication therapy: a capture phase (i.e., first-line therapy provided to achieve control of NAS severity) and a weaning phase (i.e., deliberate and standardized weaning of medication). • Literature does not support a specific medication for pharmacologic therapy, either as first-line treatment or as adjuvant therapy. One survey of U.S. neonatal-perinatal medicine fellowships revealed that morphine is most commonly used as a first-line medication for NAS, followed by methadone.[98] The AAP recommends matching infant therapy to the same class of drug exposed to in utero. For opioid-exposed newborns this means initially treating NAS with morphine or methadone.[60]

	• Second-line medications can be used when NAS severity remains uncontrolled despite optimal first-line medication dosing, difficulty weaning from the first-line medication, or recurrence of NAS signs after first-line medication has been discontinued.[62] Phenobarbital or clonidine are the most commonly used adjuvant medications.[115]
4. Consider pain treatment prior to minor procedures (i.e., use of sucrose). • NAS infants often experience diarrhea, which leads to diaper dermatitis and discomfort. Consider the use of prophylactic diaper creams in NAS infants *(expert consensus opinion)*.	Minor procedures (e.g., venipuncture, heel sticks) can cause infant discomfort that may be alleviated with sucrose. While sucrose acts through opioid pathways, studies suggest NAS infants respond differently than non-NAS infants.[34]

X. Be compliant with a safe discharge care plan for every NAS infant	
Recommendation	**Evidence-basis**
1. Initiate discharge planning for NAS infants upon admission. • Collaborate with primary caregivers, physicians, social workers, community services, and child welfare systems.[13] • Consider modifying the infant discharge checklist developed by SAMHSA to assist with your hospital's criteria for infant discharge.[42] • Notify child protective services. Collaborate on discharge disposition.	Healthcare providers involved in the delivery and care of substance affected infants are required to notify the child protective services system.[116] This has been expanded to include illegal substances, prescribed medications, and alcohol. A "Safe Plan of Care" should be developed, implemented, and monitored for infants under 1 year of age who have been affected by substance abuse or alcohol if deemed necessary by the Child Protective Investigator. The plan is intended to facilitate a holistic, multi-disciplinary approach to responding to the needs of the entire family.[116] Nurse and physician notes are very helpful and provide insight into the hospitalization, the mother's ability to safely care for her infant and the identification of service needs of the mother and infant.
2. Ensure exposed (or at risk) infants have been properly monitored for development of NAS before discharge. • Monitor all infants at risk for NAS for a minimum of 4-7 days in a hospital setting.	Commonly described NAS signs include central nervous system irritability (e.g., tremors, hypertonia, sleep disturbance, high-pitched cry), autonomic nervous system overactivity (e.g., nasal stuffiness, tachypnea) and gastrointestinal dysfunction (e.g., feeding intolerance, diarrhea).[117]

• Determine minimum required monitoring period after discontinuation of infant's pharmacologic treatment for NAS.	Many factors affect timing and severity of NAS, including those associated with the drug (e.g., timing of maternal drug use, drug type, drug purity, placental drug transfer), infant (e.g., gestational age, pharmacogenomics, birth weight), environment (e.g., rooming-in, breastfeeding) and hospital (e.g., variation in treatment and weaning protocols).[60,73,118] There are studies that both confirm[119,120] and refute[121-126] associations between maternal methadone dose and development of NAS. However, a systematic review and meta-analysis found no correlation between maternal methadone or buprenorphine dose and development of NAS.[127,128] The AAP advises inpatient monitoring of opioid-exposed infants for a minimum of 4-7 days.[60] A retrospective review of primarily opiate exposed infants determined that 95% of infants required pharmacotherapy by day of life 5, and that infants exposed to polysubstances required earlier NICU admission for NAS than infants exposed only to opiates.[93] Infants should be free of signs of withdrawal for a minimum of 24-48 hours after discontinuation of opioids prior to hospital discharge.[60]
3. Ensure pediatric follow-up within 72 hours of hospital discharge.[129] • A handoff should occur between the hospital provider and the community Pediatrician. At minimum, this should include: hospital course; any pharmacologic treatment, including outpatient medication plans; recommendations for consultant follow-up (e.g., Neurodevelopmental, Ophthalmology); scheduled follow-up appointments (e.g., Early Steps); and involvement of community partners (e.g., Healthy Start).	When compared to uncomplicated term infants, NAS infants are 2.5 times as likely to be readmitted within 30 days of hospital discharge.[130] Pediatricians should focus on the following areas: motor deficits; cognitive delays; behavioral concerns (e.g., hyperactivity, impulsivity, attention deficit disorders); school absence or failure; growth and nutritional benchmarks.[74] Ophthalmic abnormalities described in subjects with a history of NAS include reduced acuity, nystagmus, delayed visual maturation, strabismus, refractive errors, and cerebral visual impairment.[131]
4. Arrange an Early Steps referral prior to hospital discharge.	Common diagnoses in childhood for opioid exposed children include: attention deficit disorders, disruptive behavior, and need for psychiatric referral.[18] The lifelong impacts of early drug exposure remain

	unknown.[15] Close follow-up of growth, behavioral, and developmental problems is recommended for NAS infants.[80,132]
5. Refer all pregnant women with substance use disorders, and their infants to Healthy Start Care Coordination.[133]	
6. Provide primary caregiver with a written list of community resources as applicable (e.g., postpartum depression, peer-to-peer counseling, nurse home visitation, Nurse Family Partnership) and determine the following prior to discharge:[42,134,135] • Availability of safe housing • Completion of an evaluation of social support • Completion of primary caregiver education on NAS, safe sleep, and shaken baby syndrome • Demonstration of nonpharmacologic management techniques • Confirmation of follow-up appointment with an outpatient Pediatrician and other required consultants	Rates of abuse, neglect, foster placement, and hospital readmission are higher in NAS infants.[13,130] Discharge planning for NAS infants should include home visitation and early intervention services, such as attachment-based parenting support, a home nursing consultant, a social work consult, and referrals to healthcare professionals knowledgeable about NAS who are accessible to primary caregivers post-discharge.[42] Medicaid can potentially play a role in improving the transition home for NAS infants through home visitation or case management services. Effective interventions that focus on early detection and mitigation of signs of withdrawal post-discharge merit further study.[130] A systematic review of peer-delivered recovery support indicates that these services have a positive impact on participants.[136] Peer support is crucial for these mothers, who may experience feelings of guilt, particularly from witnessing their infant's signs of withdrawal[137] and have a higher risk of being diagnosed with a mental health diagnosis.[138] Infants with NAS are at increased risk for sleep-related deaths.[139,140] Inconsolable or frequent crying increases an infant's risk for being shaken.[141] Primary caregivers and their partners account for the majority of perpetrators. It is important for primary caregivers and caregivers to know how they can cope if they find themselves becoming frustrated.

APPENDICES

APPENDIX A: DRUGS OF ABUSE

Please see Table 1. Onset, Duration, and Frequency of NAS Caused by Various Substances on page e552 of Kocherlakota P. Neonatal abstinence syndrome. Pediatrics 2014;134:e547-61 available from http://pediatrics.aappublications.org/content/134/2/e547.

APPENDIX B: SUBSTANCE USE SCREENING TOOLS & POTENTIAL RESPONSES TO POSITIVE SCREEN

Substance Use Disorder Screening Tools

The following are screen tools recommended by the Alliance for Innovation in Maternal Health (AIM) patient safety bundle on Obstetric Care for Women with Opioid Use Disorder.

- National Institute on Drug Abuse. **Clinician's Screening Tool for Drug Use in General Medical Settings.**
- Washington State Department of Health. **Substance Use Disorders During Pregnancy: Guidelines for Screening and Management.** Revised edition 2016. DOH Publication Number: 950-135.
- Sample Screening Tools
  - **AUDIT-C**
  - **4P's.**
  - **T-ACE**
  - **DAST-10**
  - **CRAFFT**
- **Recognizing Opioid Use Disorder During Pregnancy: Effective Screen Methods for OUD and its Co-Morbidities**

Screening, brief intervention and referral to treatment (SBIRT)

- Substance Abuse and Mental Health Services Administration (SAMHSA). **Screening, Brief Intervention, and Referral to Treatment (SBIRT).**
- Wright, T. E., M. Terplan, S. J. Ondersma, C. Boyce, K. Yonkers, G. Chang and A. A. Creanga. **The role of screening, brief intervention, and referral to treatment in the perinatal period.** *Am J Obstet Gynecol* 2016.

Managing Substance Use and Disorders during Pregnancy

- World Health Organization (WHO). **Guidelines for the Identification and Management of Substance Use and Substance Use Disorders in Pregnancy**
- State of Maine, Department of Health and Human Services. **SnuggleME Project**.

APPENDIX C: SUGGESTED MATERNAL EDUCATION TOPICS

<table>
<tr><th colspan="2">Medication-assisted treatment facilities</th></tr>
<tr><td colspan="2">

Provide education on effects of opiate use on pregnancy and infant

Healthy Pregnancy Healthy Baby Fact Sheets
March of Dimes information on NAS

</td></tr>
<tr><th colspan="2">Prenatal care providers
(i.e., obstetricians, primary care physicians, emergency department)</th></tr>
<tr><td colspan="2">

Screen women of reproductive age for substance use disorders
Provide education and resources for risk reduction interventions (e.g., counseling, medication-assisted treatment, infectious disease screening)
Evaluate mental health
Encourage adherence to medication-assisted treatment
Provide education on effects of opiate use on fetus and infant
Promote breastfeeding
Ensure awareness of legal implications of substance use in pregnancy

</td></tr>
<tr><th colspan="2">Obstetricians (in addition to routine prenatal care and prenatal care provider education)</th></tr>
<tr><td><28 weeks gestation

Recommend monthly visits</td><td>

Clarify expectations during pregnancy
Provide education regarding medication safety in pregnancy, importance of nutrition and exercise, and teratogen avoidance
Improve access to community resources (e.g., housing, transportation, insurance)
Provide appropriate consultations for mental healthcare, medication-assisted treatment
Provide support to cope with stigma associated with OUD
Discuss interconception care (i.e., pregnancy planning and contraceptive options).

</td></tr>
<tr><td>28 weeks
to delivery

Recommend
28-36 weeks: every 2-week visits

>36 weeks weekly visits</td><td>

Clarify expectations during pregnancy, intrapartum, and postpartum periods
Discuss pain control during intrapartum and postpartum periods
Provide education regarding parenting, immunizations, and interconception care (i.e., pregnancy planning and contraceptive options)

</td></tr>
<tr><td>Postpartum</td><td>

Provide education regarding parenting and interconception care (i.e., pregnancy planning and contraceptive options; postpartum depression; connection to primary care for continued follow-up)
Discuss pain control during the postpartum period

</td></tr>
<tr><th colspan="2">Pediatricians and Neonatologists</th></tr>
<tr><td colspan="2">

Clarify expectations for infant hospitalization (monitoring, screening, nonpharmacologic strategies, pharmacologic treatment) and post-discharge follow-up
Provide education on parenting and effects of opiate use on the infant
Promote breastfeeding
Improve pediatrician and primary caregiver awareness of available community resources

</td></tr>
</table>

APPENDIX D: INFANT SCREENING SURVEILLANCE METHODS

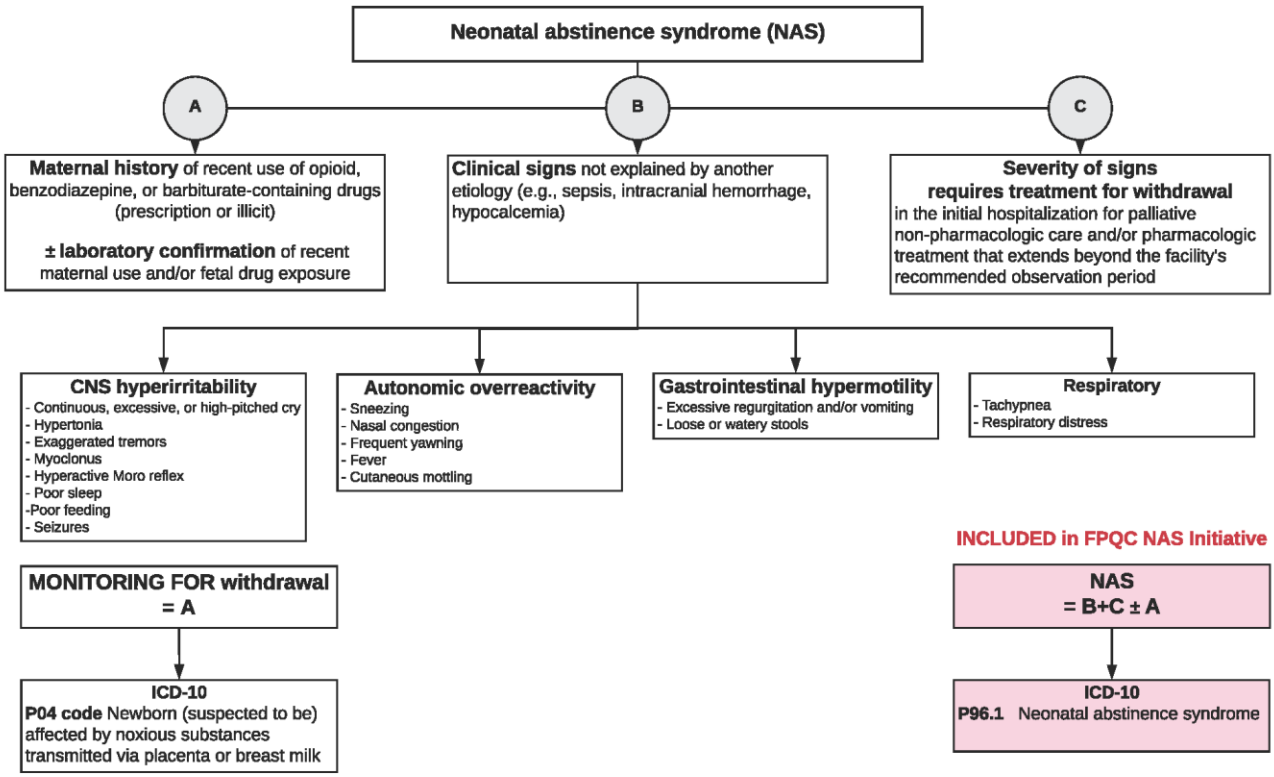
For information on the timing windows for detecting biological specimens, please see Figure 2. Window of Detection for Biological Specimens in Cotton SW. Drug Testing in the Neonate. Clin Lab Med. 2012;32(3):449-466 available from https://doi.org/10.1016/j.cll.2012.06.008

Screening for fetal exposure

- Urine: For information on urine screening, please see Table 3. Urinary Screening for Various Drugs and Approximate Duration of Detection in the Neonate on page e553 of Kocherlakota P. Neonatal abstinence syndrome. Pediatrics 2014;134:e547-61 available from http://pediatrics.aappublications.org/content/134/2/e547

- Meconium, hair, and other materials: See Exhibit FS #9.2 on page 81 of SAMSA's *Clinical guidance for treating pregnant and parenting women with opioid use disorder and their infants*, available from http://cdn.atforum.com/wp-content/uploads/Clincal-Guidance-for-Treating-Pregnant-and-Parenting-Women-With-Opioid-Use-Disorder-and-Their-Infants.pdf

APPENDIX E: NAS DEFINITION AND ICD-10 CODING ALGORITHM



P04 code used to report newborn (suspected to be) affected by noxious substances transmitted via placenta or breast milk
P96.1 used to report neonates with signs of withdrawal due to antenatal exposures to illicit use or misuse of drugs.

Include infants with ALL of the following:
1) NAS signs
2) Infant requires treatment (nonpharmacologic or pharmacologic) that extends beyond the facility's recommended observation period.

Exclusions:
- Infants readmitted for management of NAS symptoms.
- Iatrogenic withdrawal (ICD-10 code P96.2): Neonates who require opioids to prevent or treat signs of withdrawal following prolonged use of opioids for valid medical conditions (e.g., extracorporeal life support, or treatment of pain after surgical procedures).

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APPENDIX F: NAS SIGNS

To see a schematic illustration of the mechanism of opioid withdrawal in neonates, please see Figure 2 on page e551 of Kocherlakota P. Neonatal abstinence syndrome. Pediatrics 2014;134:e547-61 available from http://pediatrics.aappublications.org/content/134/2/e547

APPENDIX G: NAS SCORING TOOLS

For a table showing assessment tools, see Table 1. Neonatal Abstinence Syndrome Assessment Tools on page 213 of Orlando S. An overview of clinical tools used to assess neonatal abstinence syndrome. J Perinat Neonatal Nurs 2014;28:212-9 available at https://insights.ovid.com/pubmed?pmid=25062523 or https://doi.org/10.1097/JPN.0000000000000043

Lipsitz Tool and directions for its use: https://opqc.net/sites/bmidrupalpopqc.chmcres.cchmc.org/files/Webinar%20Series/Lipsitz_tool_OPQC_09302014_FINAL.pdf and https://opqc.net/sites/bmidrupalpopqc.chmcres.cchmc.org/files/Webinar%20Series/Lipsitz%20Tool-directions%20for%20use_09302014_FINAL.pdf

Eating, Sleeping, Consoling Care Tool training manual: http://files.constantcontact.com/dfa00fff501/ce6dfaf8-dc7c-4999-bfb2-fca3ac875c86.pdf

APPENDIX H: INTRODUCTION TO PLAN OF SAFE CARE—FLORIDA

To address the nation's prescription drug and opioid epidemic Congress passed the Comprehensive Addiction and Recovery Act of 2016 (CARA). Section 503 of the act adds provisions to the Child Abuse Prevention and Treatment Act (CAPTA) related to infants who are affected by prenatal substance exposure.

As a result of this federal legislation Florida has enacted policies and procedures to address the complex needs of substance affected infants and their families.

A Plan of Safe Care must be developed, implemented and monitored for infants (under one-year-old) who have been affected by exposure to controlled substances (illegal or legal) and alcohol.

A Plan of Safe Care is intended to be developed at the earliest point the mother's use or the infant's exposure has been identified.

A Plan of Safe Care can be developed by medical personnel, behavioral health specialists, a home visitor staff (e.g., Healthy Start, Healthy Families, etc.) or a child welfare professional who regularly interact with the mother prior to, or soon after, the birth of the infant. The components of a Plan of Safe Care can be incorporated into other assessments and treatment plans.

A Plan of Safe Care's acceptance is voluntary and should be completed in consultation with the mother and other affected family members. To determine appropriate intervention efforts needed professionals involved with the family shall obtain and assess the following information:

Mother's Substance Use and Mental Health Needs

1) Substance use history.
2) Mental health history.
3) Treatment history.
4) Medication assisted treatment history.
5) Referrals for services.

Infant's Medical Care

1) Prenatal exposure history.
2) Hospital care (NICU, length of stay, diagnosis.
3) Other medical or developmental concerns.
4) Pediatric care or follow-up.
5) Referral to Early Intervention and other services.

Mother's Medical Care

1) Prenatal care history.
2) Pregnancy history.
3) Other medical concerns.
4) Screening and education.
5) Follow-up care with OB-GYN.

6) Referral to other health care services.

Family/Caregiver History and Needs

1) Prior involvement with child welfare.
2) Child safety or risk concerns.
3) Parent-child relationship.
4) Family history.
5) Living Arrangements.
6) Current support network.
7) Current services.
8) Needed supports/services.

HELPFUL LINKS

I. Form a multi-disciplinary team to address NAS

- Improvement Teams: https://www.hrsa.gov/sites/default/files/quality/toolbox/508pdfs/improvementteams.pdf
- Science of Improvement: Forming the Team: http://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementFormingtheTeam.aspx

II. Encourage primary caregiver engagement

- *Preconception care*: https://www.acog.org/Patients/FAQs/Good-Health-Before-Pregnancy-Preconception-Care
- *Preconception counseling and care*: https://www.aafp.org/afp/2013/1015/p499.html
- *Planning for pregnancy*: https://www.cdc.gov/preconception/planning.html
- *Fact Sheet on Opioid Use Disorder and Pregnancy*: https://www.acog.org/Patients/FAQs/Important-Information-About-Opioid-Use-Disorder-and-Pregnancy
- *Substance Use During Pregnancy*: https://www.guttmacher.org/state-policy/explore/substance-use-during-pregnancy
- *Patient Education Materials Assessment Tool (PEMAT) and User's Guide:* https://www.ahrq.gov/professionals/prevention-chronic-care/improve/self-mgmt/pemat/index.html
- Tips on motivational interviewing*: Quick guide for clinicians - Brief interventions and brief therapies for substance abuse (SAMHSA, 1999):* https://store.samhsa.gov/shin/content/SMA06-4136/SMA06-4136.pdf
- *Trauma-Informed Primary Care: Fostering resilience and recovery (National Council for Behavioral Health, 2018):* https://www.thenationalcouncil.org/consulting-areas-of-expertise/trauma-informed-primary-care/

III. Develop a hospital guideline to manage OUD and NAS

- See FPQC *Neonatal Abstinence Syndrome (NAS) Initiative Tool Box* for examples: https://health.usf.edu/publichealth/chiles/fpqc/nas/toolbox

IV. Monitor infant nutrition

- *FPQC Mother's Own Milk (MOM) Initiative Tool Box*: http://health.usf.edu/publichealth/chiles/fpqc/momtoolbox

V. Screen mothers for substance use

- State laws & policies re: Substance use during pregnancy (Guttmacher Institute): https://www.guttmacher.org/state-policy/explore/substance-use-during-pregnancy
- Opioid treatment program locator (SAMHSA): https://findtreatment.samhsa.gov/locator
- Public policy statement on women, alcohol, and other drugs, and pregnancy (American Society of Addiction Medicine, 2011): https://www.asam.org/advocacy/find-a-policy-statement/view-

policy-statement/public-policy-statements/2011/12/15/women-alcohol-and-other-drugs-and-pregnancy

- *Clinical guidance for treating pregnant and parenting women with OUD and their infants (copy and paste link into browser):* https://store.samhsa.gov/shin/content/SMA18-5054/SMA18-5054.pdf
- Obstetric Care for Women with Opioid Use Disorder patient safety bundle: https://safehealthcareforeverywoman.org/patient-safety-bundles/obstetric-care-for-women-with-opioid-use-disorder/
- INTEGRATED 5 P's INSTRUMENT: http://www.mhqp.org/guidelines/perinatalpdf/ihrintegratedscreeningtool.pdf
- CRAFFT INSTRUMENT: https://ceasar.childrenshospital.org/wp-content/uploads/2018/04/CRAFFT-2.1_Clinician-Interview_2018-04-23.pdf
- SURP-P INSTRUMENT: https://journals.lww.com/greenjournal/fulltext/2010/10000/Screening_for_Prenatal_Substance_Use__Development.7.aspx%22%20Substance%20Use%20Risk%20Profile%E2%80%93Pregnancy%20(SURP-Pb,c,d)
- Brief negotiated interview: https://www.bu.edu/bniart/sbirt-in-health-care/sbirt-brief-negotiated-interview-bni/
- SBIRT Institute video: https://www.youtube.com/user/SBIRTInstitute/videos?disable_polymer=1
- WAST screening tool: http://womanabuse.webcanvas.ca/documents/wast.pdf
- *Substance Abuse Treatment: Addressing the Specific Needs of Women (copy and paste link into browser*): https://store.samhsa.gov/shin/content/SMA13-4789/SMA13-4789.pdf
- For Alcohol use specifically:
  - *T-ACE INSTRUMENT*: https://pubs.niaaa.nih.gov/publications/arh25-3/204-209.htm
  - *TWEAK INSTRUMENT*: https://pubs.niaaa.nih.gov/publications/AssessingAlcohol/InstrumentPDFs/74_TWEAK.pdf
- *Screening for Substance Abuse During Pregnancy: Improving Care, Improving Health*: https://www.ncemch.org/NCEMCH-publications/SubAbuse.pdf
- SAMHSA Mental Health Screening Tools:
- https://www.integration.samhsa.gov/clinical-practice/screening-tools
- Trauma informed care education:
- https://www.thenationalcouncil.org/consulting-areas-of-expertise/trauma-informed-primary-care/
- ACOG Patient Education Fact Sheet – *Important Information about Opioid Use Disorder and Pregnancy*: https://www.acog.org/-/media/For-Patients/pfs012.pdf?dmc=1&ts=20180914T1946467600
- CDC Preconception planning: https://www.cdc.gov/preconception/planning.html
- *Good Health Before Pregnancy: Preconception Care*: https://www.acog.org/-/media/For-Patients/faq056.pdf?dmc=1&ts=20180914T1953215577

VI. Identify infants at risk for developing NAS

- *Clinical guidance for treating pregnant and parenting women with opioid use disorder and their infants*: http://cdn.atforum.com/wp-content/uploads/Clincal-Guidance-for-Treating-Pregnant-and-Parenting-Women-With-Opioid-Use-Disorder-and-Their-Infants.pdf

VII. Use an abstinence scoring system

- Inter-observer reliability of the Finnegan: http://neoadvances.com/

VIII. Optimize nonpharmacologic management

- Swaddle baby correctly: https://hipdysplasia.org/developmental-dysplasia-of-the-hip/hip-healthy-swaddling/

IX. Provide pharmacologic management when necessary

- For information on NAS phamacological medications, please see Table 4. Pharmacological Treatment Options for NAS on page e555 of Kocherlakota P. Neonatal abstinence syndrome. Pediatrics 2014;134:e547-61 available from http://pediatrics.aappublications.org/content/134/2/e547

X. Be compliant with a safe discharge care plan for every NAS infant

- Early Steps: http://www.floridahealth.gov/programs-and-services/childrens-health/early-steps/index.html
- Nurse Family Partnership: https://www.nursefamilypartnership.org/wp-content/uploads/2017/11/NFP-and-Substance-Abuse_final.pdf
- The Joint Commission Quick Safety Tips: *Managing Neonatal Abstinence Syndrome*: https://www.jointcommission.org/assets/1/23/Quick_Safety_Issue_27_Sep_2016.pdf
- Healthy Start services: http://www.floridahealth.gov/programs-and-services/childrens-health/healthy-start/_documents/final-chap-12.pdf
- Safe Sleep (NIH): https://www1.nichd.nih.gov/sts/Pages/default.aspx
- SIDS: http://www.lung.org/lung-health-and-diseases/lung-disease-lookup/sudden-infant-death-syndrome-sids/sids-syndrome-risk.html
- Shaken Baby Syndrome:
  - National Center on Shaken Baby Syndrome: https://dontshake.org/learn-more
  - CDC: https://americanspcc.org/wp-content/uploads/2014/01/sbs_media_guide_cdc.pdf
- Section VII Rec 3 – CAPTA state plan: http://www.dcf.state.fl.us/admin/publications/CAPTA/CAPTA_StatePlan2011-2014.pdf
- Florida's Center for Child Welfare, Plan of Safe Care: http://www.centerforchildwelfare.org/PlanSafeCare.shtml

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